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THE PROBLEM OF LONG CONTINUED, LOW GRADE FEVER

HOBART A. REIMANN, MD

Associate Professor of Practice of Medicine and Clinical Medicine,
Jefferson Medical College
PHILADELPHIA

The problem of diagnosis in patients with long continued, low grade fever occurs far more commonly than would be led to believe by the few studies that have been reported dealing exclusively with the subject. A serious question exists regarding the range of body temperature found in normal persons and the limits beyond which disease may be suspected. The present study with persons whose maximal or whose average temperature is higher than the accepted normal at the time of Wunderlich, sixty-five years ago, has shown that a certain proportion of normal persons may have temperatures regulated at levels slightly higher than 37 C (98.6 F).¹ There are, on the other hand, clinicians who are skeptical of this view and believe that any rise above this level should be regarded as evidence of actual disease.² They are correct in pointing out the danger of regarding normal thermuria as a diagnostic refuge when no cause can be found for persistent low grade fever. Yet it seems likely that a fixed level of body temperature represents the normal for all. Differences are known to exist in a number of measurable factors concerning any group of individuals. Variations in pulse rate, respiratory rate and blood pressure, for example, are too well known to require further mention. There is, therefore, basis for the prediction of the existence of persons whose temperature may be regulated normally at levels slightly under or slightly over 37 C (98.6 F). When a curve is prepared to show the percentage probability of occurrence of oral temperature in a normal population as shown in chart 1, it appears that the oral temperature of about 60 per cent of normal adult persons is between 36.8 C (98.2 F) and 37.2 C (98.9 F), spread beyond these levels is considerable in both

directions, with the incidence of probability diminishing toward extremes of 36.1 C (97 F) on the one hand and 37.9 C (100.2 F) on the other.

Several investigators who have studied prolonged, low grade fever as a diagnostic problem have selected for discussion hospital records or records from their practice.³ Many patients were obviously ill and the temperature ranged between 37.8 C (100 F) and 38.4 C (101 F), which is beyond the predicted normal range. In a large proportion of such cases, diagnosis of infection or neoplasm was eventually made. These results suggested that temperature persistently exceeding 37 C (98.6 F) is of serious import and only under the most exceptional circumstances should it be regarded as normal in any given case. In the present investigation the problem was approached from a different point of view, and different impressions were gained. A deliberate attempt was made to seek out individuals with prolonged subfebrile temperature, rarely exceeding 37.2 C (100 F), and to study each case intensively at repeated intervals over long periods. Of the sixteen patients thus far studied, all were women, ten of whom were unmarried. Two general types have emerged: (a) five patients who had no complaints and were regarded as otherwise healthy and (b) eleven who were regarded as neurotic, who had a multitude of bizarre complaints for which no cause could be found after prolonged search with all the diagnostic methods available.

In studying this group of persons, efforts were made to determine whether hyperthermia represented normal temperature or whether actual fever and underlying disease were present. The problem was especially difficult in neurotic patients who, in addition to hyperthermia, had numerous other complaints. A number of infectious and other diseases were considered as possible causes for the fever, the more common of which were tuberculosis, undulant fever, rheumatic fever, syphilis, neoplasm and brain disease.^{2b} The influence of various endocrine gland disturbances on regulation or alteration of the temperature also was considered. There is no doubt that both the thyroid and the adrenal glands may play a role. Most observers who have studied the temperature in relation to the menstrual cycle have noted a rise in the level during the latter half of the intermenstrual period, often to fever levels.⁴ Fekete,⁵ who recently reviewed some of the literature on the subject, suggested over-secretion of the anterior lobe of the hypophysis as the

From the Department of Medicine, University of Minnesota Hospital and before the Section on Practice of Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., 1936.

Williams M. H. A Note on the Temperature of 1000 Children. *Arch. Pediatr.* 1:1192-1194, 1912. Zimmermann H. Die obere Grenze der normalen Körpertemperatur. *München med. Wchnschr.* 77: 2051 (Nov. 28) 1930. Nirenstein E. Schwerwiegende Irrtümer bei laboratorischer Bestimmung der Körpertemperatur. *Med. Klin.* 27: 1711 (Nov. 20) 1931. Foelchau. Temperaturbeobachtungen in der Familie. *Med. Klin.* 30: 574-576 (April 27) 1934. References in other papers are given in footnote 8.

(a) Saathof L. Ueber die Notwendigkeit einer einheitlichen Temperaturmessung und über die Grenze zwischen normalen und pathologischen Temperaturen. *München med. Wchnschr.* 61: 1771-1774 (11) 1914. (b) Mester E. Ueber Subfebrilität. *Med. Klin.* 22 (Nov. 5) 1926. (c) Paton J. H. F. The Mean Temperature of the Girls. *Brit. M. J.* 2: 142-144 (July 23) 1932. (d) Kintner Rowntree L. G. Long Continued Low Grade Idiopathic Fever. *M. A.* 102: 889-892 (March 24) 1934. (e) Carr J. C. Diagnosis of Obscure Fever. *Illinois M. J.* 68: 446-453 (Feb. 1935). (f) Hamman L. and Wainwright, C. W. Diagnosis of Fever. *Bull. Johns Hopkins Hosp.* 58: 109-133 (Feb. 1936).

3 Kintner and Rowntree.^{2d} Carr.^{2e} Hamman and Wainwright.^{2f} 4 Giles A. E. The Cyclical or Wave Theory of Menstruation, with Observations on the Variation in Pulse and Temperature in Relation to Menstruation. *Obst. Tr.* 39: 115-124, 1897. Zuntz, L. Untersuchungen über den Einfluss der Ovarien auf den Stoffwechsel. *Arch. f. Gynak.* 78: 106-136, 1906. King J. L. Concerning the Periodic Cardiovascular and Temperature Variations in Women. *Am. J. Phys.* 3: 4: 203-219, 1914. Cullis W. C. Oppenheimer E. N. and Ross Johnson M. Observations on Temperature and Other Changes in Women During the Menstrual Cycle. *Lancet* 2: 954-956 (Nov. 4) 1922.

5 Fekete A. Ueber prämenstruelle Temperaturerhöhungen. *Monatsschr. f. Geburtsh. u. Gynak.* 99: 29-40 (March) 1935.

cause, and empirical attempts⁶ have already been made to control the premenstrual temperature rise with glandular substances.

In studying these patients, aside from a careful history and long and repeated clinical observation and examination a number of other factors and data were especially helpful in diagnosis. They included registration of several temperature readings daily for at least a month at repeated intervals morphologic and

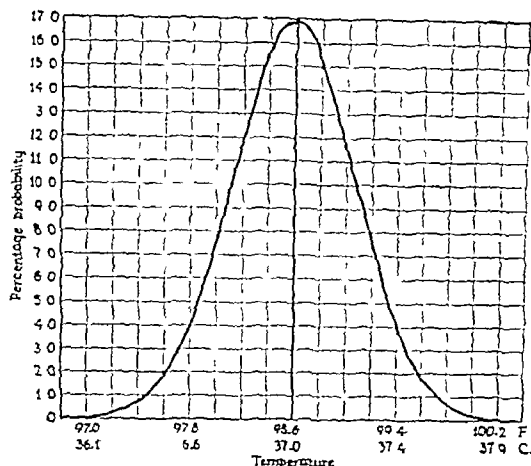


Fig. 1—Curve of the probable incidence of average normal oral temperature constructed from a table prepared by Dr. Frances Vanzant.^{1b}

numerical studies of blood cells, determination of the blood sedimentation rate, Wassermann reaction and various agglutinins, intradermal tests for tuberculosis and brucellosis, basal metabolic rate, constancy of body weight and any special procedures as dictated by the individual case. The drug tests of Hollo and Hollo-Weil,⁷ depending on the antipyretic effect of certain drugs on fever of infectious origin and of opium in

infection no abnormalities aside from subfebrile temperature were detected during several periods of observation. In the five years following my first examination the patient has been well except for occasional colds. Her temperature still registers over 37°C (98.6°F) as it has done for twenty-four years.

CASE 2—Mrs. M. Z. (record furnished through the courtesy of Dr. Reuben Johnson) was operated on in 1932 for acute appendicitis followed by pain in the abdomen probably due to oophoritis, with leukocytosis of 12,000. The pain and leukocytosis disappeared after six months. Ever since the operation she noted slight fever in the afternoon averaging 37.6°C (99.6°F), and almost always lower in the first half of the intermenstrual period. There were no complaints and no abnormal physical signs were found except the elevated temperature. The Widal test, agglutinins for Brucella, numerous roentgenograms of the chest and sinuses and urinalysis were negative and the basal metabolic rate was normal. In May 1936 her temperature measured during a period of two weeks averaged 37.3°C (99.2°F). The patient is well and carries on her daily work without difficulty.

CASE 3—Mrs. M. A., aged 28, first noted an elevation of temperature in 1932 during the course of an examination to determine the cause of dysmenorrhea. Because the temperature reached 37.2°C (99°F) or over daily, her physicians examined her repeatedly for tuberculosis without positive results. The temperature when measured was often higher than normal and caused the patient considerable apprehension. There had been no cough, loss of weight or other symptoms except those of dysmenorrhea which have improved since 1932.

The patient by request entered the hospital for two days where an examination revealed no abnormalities. All laboratory studies were negative. The patient then returned home to her usual work and recorded her oral temperature twice daily for fifty-six days, including two menstrual periods. With only two or three exceptions, the afternoon temperature exceeded 37°C (98.6°F), but was never above 37.6°C (99.6°F). The typical rhythmic relation to the menstrual period was observed as shown in chart 2. During the first half of the intermenstrual period the average temperature was consistently lower than that during the latter half.

CASE 4—Miss J. A., aged 17, had an ovarian cyst removed in February 1934, following which she promptly recovered. In July she became tired and sleepy in the afternoon.

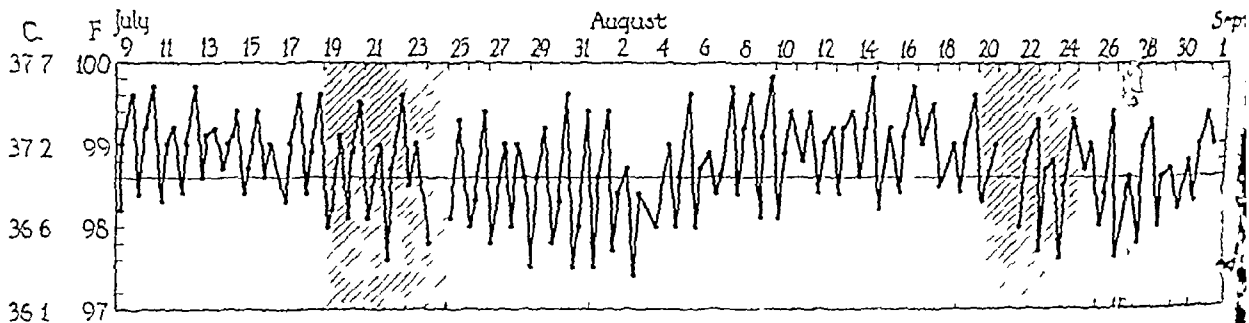


Fig. 2—Fifty-six day oral temperature record including two menstrual periods (shaded area) in case 3. The rhythmic relationship of the temperature to the menstrual cycle is shown. The temperature level is generally lower during menstruation and the first half of the intermenstrual period.

depressing normal temperature, have been helpful but like all other tests they are not infallible.

To illustrate the problem of diagnosis in cases of prolonged fever a few illustrative reports are given.

PROLONGED FEVER IN OTHERWISE NORMAL PERSONS

CASE 1—Miss L. E., aged 31, had been regarded as a potential invalid with possible tuberculosis for nineteen years because of persistent low grade fever. After a complete exam-

⁶ Menninger-Lerchenthal E. Prophylaxe gegen den aggressierenden Einfluß der Menstruation auf latente und bestehende Krankheiten besonders Psychosen und Lungentuberkulose. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 114: 234-245, 1912.

⁷ Hollo J., and Hollo-Weil F. Experimentelle Analyse der Subfebrilen Temperaturen und ihre Bedeutung. *Z. f. d. ges. Neurol. u. Psychiat.* 55: 440, 1918.

⁸ This case was reported in detail previously by Rimmann H. A. (a) *National Hyperthermia*, J. A. M. A. 99: 1862 (Nov. 26) 1932. (b) *National Hyperthermia*, Arch. Int. Med. 55: 792-804 (May) 1935.

August a physician found her temperature to be elevated and instituted a search for the cause. The temperature was found to be elevated daily, usually between 37.2°C (99°F) and 37.6°C (99.6°F) rarely reaching 37.8°C (100°F). No symptoms were noted except "feeling a little warm" when the temperature was highest. Correction of rather marked secondary anemia by appropriate medication relieved the asthenic symptoms completely. She was given compound solution of ephedrine for two weeks without any effect in the temperature level. Her systolic blood pressure on several occasions was reported as 160, 140 and 146. The menstrual period was normal. In December the left maxillary sinus was punctured twice to avert the patient was referred to the University Hospital by Dr. Herman Drill in March 1935 for further study.

On physical examination she appeared to be normal and robust. No physical or mental abnormalities were detected. The pulse rate was 96 per minute, the blood pressure was 110 systolic and 96 diastolic. All roentgenographic studies

tests with the exception of the basal metabolic rate determination, were normal. The latter was recorded as -23 and -33 per cent of normal, while the temperature was 37.2°C (99°F). Desiccated thyroid in an amount of 0.12 Gm per day was given, beginning March 17. Twelve days later the metabolic rate was -12 per cent and in April it was -17 per cent and 4 per cent. The temperature level was uninfluenced but the pulse rate was somewhat increased.

The diurnal temperature was measured at intervals of two hours and with one exception exceeded normal during the day, varying between 37.2°C (99°F) and 37.7°C (99.8°F). On three days it reached 37.8°C (100°F). The day on which the temperature remained low she had received powdered opium 0.12 Gm and had slept most of the time. On the preceding day she was given aminopyrine 1.8 Gm without any lowering of the temperature level. On two days when the temperature measured 37.6°C (99.6°F) she was obliged to climb and descend five flights of steps repeatedly for fifteen minutes. The result was paradoxical, on both occasions the temperature dropped to 36.7°C (98°F) after forty-five minutes. Epinephrine chloride 0.5 cc of a $1:1,000$ solution, given hypodermically apparently caused an elevation in the temperature.

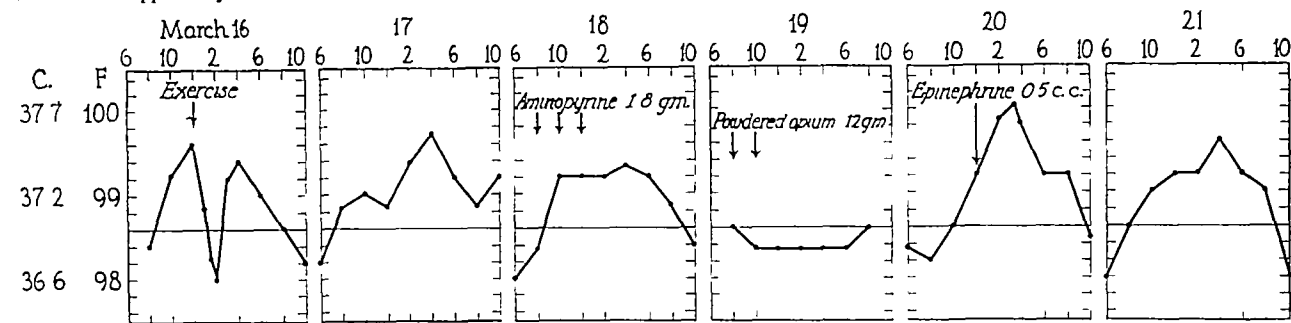


Fig. 3—Oral temperature on consecutive days in case 4. A drop in temperature following exercise, the ineffectiveness of aminopyrine in lowering the level, a suppression of temperature by opium, an elevation caused by epinephrine and two control days in which no tests were made are shown.

level. Histamine 0.5 mg had no effect. The tests are illustrated in chart 3. No changes were noted in relation to the menstrual period. Miss V was seen again in April 1936. She was well, without complaints, but the temperature measured over a week's time reached 37.4°C (99.4°F) daily.

CASE 5—Mrs. P. J., aged 26, was referred by Dr. Lawrence Cady for determination of the cause for prolonged low grade fever. She gave birth to an infant in February 1935 and was troubled with cystitis, which lasted about two weeks and disappeared. In December the patient noted that she tired easily on exertion. She lost 7 pounds (3.2 Kg.) but regained it rapidly. These symptoms were attributed largely to overwork and exhaustion. Rest in bed was found to relieve them. Tuberculosis was suspected. She measured her temperature and found it to vary from 37.4°C (99.4°F) and 38.1°C (100.6°F). She then recorded her temperature daily and noted herself that the level was generally higher in the week preceding her menstrual period and lowest during the week following. Her menstrual history is normal.

On examination the patient was found to be well developed and robust. She made no complaints except of tiredness after housework. No abnormalities were discovered. The pelvic organs were normal. The pulse rate averaged 72 beats per minute and the temperature during three days of observation under bed rest reached 37.3°C (99.2°F) only once. Subcutaneous injection of 0.5 cc. of a $1:1,000$ solution of epinephrine hydrochloride caused an elevation of the pulse rate but did not influence the temperature. The blood count, sedimentation time and repeated urinalyses were negative. The Mantoux test with 0.1 mg of old tuberculin was negative. The basal metabolic rate was -7 per cent.

The patient continued to record her temperature four times a day for forty days at home. The temperature at 7 a. m. was always subnormal, with the lowest levels recorded a week after the menstrual period. The afternoon temperature without exception ranged between 37.2°C (99°F) and 37.6°C (99.6°F), never exceeding the latter level.

The five cases just described concern persons in good health and without complaints who are able to under-

take their daily tasks without difficulty but who have diurnal oral temperatures which persistently reach levels higher than 37°C (98.6°F). Because of this tuberculosis was suspected in each instance.

PROLONGED FEVER IN NEUROTIC PERSONS

CASES 6, 7 and 8—(Misses R. L., K. U., and E. R.) were reported in detail previously.^{8b} Miss K. U., after leaving the hospital in April 1934, has returned to the outpatient department seventy times to date, visiting various divisions for various complaints. No new information was recorded. Her temperature still registers between 37.2°C (99°F) and 37.6°C (99.7°F), at which level it has apparently been for nine years. Miss E. R. was visited at her home in April 1936. Her complaints were unchanged and her temperature measured 37.2°C (99°F). Elevated temperature was first noted sixteen years ago.

CASE 9—Miss K. M., aged 30, apparently had some emotional disturbances of undetermined nature while in school in 1924. Her parents were in financial straits and were partially dependent on the patient for support. She was obliged to earn

money by teaching in addition to her schooling. Within the past few years it was said that her physiognomy had changed considerably, involving considerable loss of attractiveness and the development of a beard and hair on the extremities. Of late she has shunned male companions and has withdrawn from old friends of her own sex.

In December 1934 while under a heavy teaching load she developed some mild infection characterized by transient diarrhea, a fainting spell, and periods of sweating. Her temperature was found to be 37.8°C (100°F). Since then the patient has not been able to work. Her physician regarded her case as nervous exhaustion. She went to bed, where she remained eight months, complaining of intense weakness to the extent of being unable to lift food to her mouth. She also noted sharp pains and pulling sensations in the heart and tightness in the neck when excited. She was admitted to the University Hospital in July 1935.

On physical examination the patient was fairly well developed and was not remarkable except for slight hirsutism of the face and extremities, a greasy skin and facial acne. The hands and feet were cold and moist. There was marked dermatographia. Psychiatric examination revealed a psychoneurotic personality. Otherwise no abnormalities were found. The laboratory and x-ray studies were negative. The pulse rate usually ranged between 90 and 100 and occasionally rose to 140 after the exertion of sitting up, for example. The temperature when registered at intervals of two hours during the day for the seventy-five days of observation without exception exceeded 37°C (98.6°F) in the daytime, averaging 37.5°C (99.5°F) and rarely reaching 37.8°C (100°F). Exercise or menstruation had no effect in elevating the level, but powdered opium depressed the usual high afternoon level to 37°C (98.6°F). Aminopyrine 1.3 Gm did not lower the level.

The patient recorded her temperature for six days in April 1936. It registered daily between 37.2°C (99°F) and 37.6°C (99.6°F). By this time she had regained considerable strength and was able to walk short distances.

CASE 10—Miss E. E., aged 23 began to have at times a peculiar feeling of twitching and numbness in the muscles of her back in 1930. These attacks were frequent at first but

gradually diminished. She was nervous, worried, irritable, cried easily, was unable to sleep and had severe orbital headaches. In May 1935 the headaches and nervousness became worse. Later she noted an inability to "make her hands do what she wanted them to do" and there was a prickling sensation of the forearms. She began to fear insanity. These symptoms she stated, were relieved by a tonsillectomy in August. In September she complained of indigestion and palpitation of the heart. A spinal puncture in October revealed normal spinal fluid. No refractive errors were found in her eyes. About this time her physician noted an elevation of temperature and requested her to keep a record for two months. This was done and with one or two exceptions the temperature rose to levels over 37.2 C (99 F) daily and exceeded 37.8 C (100 F) only once. The patient had been obliged to work hard for the past few years as a domestic servant and waitress, in addition to keeping house for an invalid father. She was well adjusted socially and rated high in high school work. The patient entered the University Hospital for study in December.

Her chief complaint was nervousness, indigestion, irregular menstruation and vague pain in the lower portion of the abdomen. Her menstrual periods began at 12 years and were always irregular and sometimes painful. Intervals between the periods which lasted for a variable number of days, varied from two to twelve weeks. On physical examination she was found to be intelligent and cooperative without undue nervousness. She appeared to be healthy and robust. Aside from marked dermatographia, cold moist extremities and temperature higher than normal, no abnormalities were discovered. Neurologic examination was negative. Her pulse rate averaged 80 beats per minute and the blood pressure was 100 systolic and 80 diastolic, rising to 110 and 85 respectively one minute after her hands were immersed in ice water. The blood, urine and gastric contents were normal when tested. The sedimentation rate was normal. The basal metabolic rates determined in December were —35, —30, —6 and —27 per cent. She was given 0.18 Gm of desiccated thyroid gland daily for nine days, after which the basal metabolic rate was still —27 per cent. The dose was doubled to 0.35 Gm daily for two weeks after which the rate rose to —7 and —9 per cent. From January 22 to January 29, 0.54 Gm given daily caused the metabolic rate to rise to +6 per cent. In spite of the large dosage, her average pulse rate was increased only 10 beats per minute; there were no unusual symptoms and no influence on menstruation or on the temperature level. The patient continued taking desiccated thyroid 0.36 Gm daily for three weeks after leaving the hospital. The temperature maintained its usual level.

CASE 11—Miss E. McG., a student, aged 15, after having visited a series of physicians was sent to me for study in October 1935 by Dr. Moses Barron. In 1930 at the age of 10 the patient was taken to a tuberculosis clinic because of persistent elevation of temperature above normal, discovered during routine periodic public school examination. There was in addition a continual nonproductive cough. Her school life was then restricted because of a suspicion of tuberculosis. Four Mantoux tests performed at this time were negative and no other evidence of tuberculosis was ever found. Her temperature was more or less continually elevated, reaching 37.6 C (99.6 F) and sometimes 38 C (100.4 F). In 1935 she complained of frontal headache. The frontal sinuses were washed and the mastoid process was opened without any abnormalities being found and with no relief of headache. Incidental history concerns the fact that the patient was abandoned as an infant and was raised by sympathetic foster parents. The patient is aware of the facts and is distressed by them. Her menstrual periods are normal and regular. Her only complaints on questioning were frontal headache, cough and deafness in the left ear. She was unaware of elevated temperature except by thermometer. On examination she appeared to be nervous with constant twitching and a short, nonproductive forced cough. These symptoms were always more marked under nervous tension. The patient was later informed that her cough was unnecessary since no cause was found to account for it. The cough promptly ceased and has not recurred to date. Seven months later a slight error of retraction was corrected with relief of the headache. Her pulse rate averaged 80 per minute. Aside from a slightly enlarged thyroid gland, no other abnormalities were detected. All laboratory tests the

Mantoux test and roentgenograms were negative. A psychometric report by Dr. Hathaway revealed an intelligence quotient of 110. Dr. R. C. Gray, the consulting psychiatrist, regarded the condition as a functional neurosis. The temperature was elevated daily, the peaks averaging about 37.5 C (99.5 F). There was no rhythmic relationship to the menstrual period. Epinephrine, aminopyrine, opium and strenuous physical exercise failed to alter the usual level.

Cases 9, 10 and 11 are described in considerable detail to illustrate the type of neurotic patient in whom hyperthermia was encountered. Several other similar patients are under observation whose records for want of space are not given in detail. One (case 12) concerns a student nurse (Miss E. M.) who had noted that her temperature when recorded at times since she entered the training school two years before was slightly higher than normal. She was regarded as suffering from a mild affective disorder. Examination and laboratory tests revealed no other abnormalities. Another patient (case 13, Mrs. M. M., aged 49) had had numerous abdominal operations. In this case hyperthermia was associated with basal metabolic rates varying from —22 to —38 per cent. Desiccated thyroid substance 0.18 Gm, given daily for two weeks, failed to raise the level or to influence the temperature. Three other patients presented symptoms and changes similar in many respects to those described. All were regarded as neurotic individuals by the psychiatrist and by myself. There can be but little doubt that neurosis is the outstanding feature in cases 6 to 13. It is of interest to note that with one exception each patient in this group was unmarried. In some patients, temperature elevation as discovered by thermometry was the chief source of concern, but in most it was noted by the physician in charge and was a minor factor in the case. The hyperthermia had been known to exist for from sixteen months to sixteen years in this group and was still present in each patient when recently measured. Each patient had visited many different physicians and many different diagnoses had been made. Tuberculosis had been suspected in each case at some time, and three patients had been confined needlessly in tuberculosis sanatoriums. After careful study at repeated intervals, no cause was found to account for fever.

Two patients, not included in this series, were studied because of prolonged fever. In one, a man aged 46, there was unmistakable evidence of infection with pallor, malaise, loss of weight and an increased blood sedimentation rate, although the leukocytes were normal and the fever failed to respond to aminopyrine. This patient had had prostatitis and a urethral discharge for years. Several months after examination, an acute prostatic abscess developed. Another patient, a woman aged 30, had had fever for six years, occasionally reaching 39.5 C (103 F). She complained of weakness and loss of weight. There was continual soreness and distress in the right hypochondrium and epigastrium. The leukocytes were normal but the sedimentation rate was 100 mm in the first hour. Aminopyrine caused a prompt drop in the temperature from 37.9 C (100.2 F) to 35.2 C (95.4 F). The Wassermann reaction was found to be + and after administration of potassium iodide the temperature returned to normal and recovery ensued. The diagnosis was syphilis of the liver.

COMMENT

In the sixteen cases reported attempts were made to show that the maximal or the average oral temperature of certain persons otherwise physically well as far as could be determined is higher than the usually

accepted normal level. In most instances, hyperthermia was first detected when the temperature was measured because of some incidental infection or disease or in routine physical examination at school. It is probable that in many instances hyperthermia was present long before its detection. Persistence of the level over the normal initiated prolonged observation and search to determine the cause. In the five women regarded as normal who were free from complaints, the "fever" caused more apprehension to the person's family or physician than to themselves. It is difficult to escape the conviction that the temperature of these persons was normal for them, especially in case 1, in which hyperthermia has existed twenty-four years.

The diagnostic difficulties were multiplied in neurotic patients as illustrated in the cases reported. Each patient represented a separate problem. Their numerous complaints necessitated careful and prolonged search to rule out the presence of underlying organic disease. Especial consideration was given to undulant fever because of the long duration, subfebrile temperature and neurotic symptoms known to characterize the occasional case. Tuberculosis is less likely to persist for years without becoming manifest.²⁴ In some cases, even after complete studies were made without detection of physical abnormalities and the patient was informed of the facts, the complaints persisted, and advice was sought elsewhere as in cases 6, 7 and 8. The fact that temperature at fever levels persisted, in one case as long as sixteen years, suggests that hyperthermia in certain patients is part of the neurotic syndrome.⁹

Of interest was the low basal metabolic rate frequently found while the temperature was higher than normal, especially in cases 4, 16 and 13. Thyroid gland medication failed to alter the rate significantly, nor was the temperature influenced by the drug, as in the case reported by Lee.¹⁰ None of these patients were myxedematous, each had menstrual disturbances and may perhaps be classed with the type of patient recently studied by Haines and Mussey,¹¹ although improvement after thyroid gland medication, as noted by these observers, did not occur.

As indicated in this study, it is of considerable practical importance to determine whether persistent temperature at levels higher than normal in a given patient is to be regarded as normal or whether actual organic disease is present. It is a serious matter, for example, to regard a patient as tuberculous and prescribe sanatorium care (cases 1, 7 and 11) on no other ground than that of fever. Furthermore, allaying the fear of nonexistent disease in patients with hyperthermia has resulted in a striking improvement in the emotional state of a number of my patients. Nevertheless, it should be reemphasized at this point that every possible diagnostic means should be employed in patients of the type here described to detect underlying, obscure disease before the temperature is regarded as normal or as part of a neurosis.

The question may be raised whether the term "habitual hyperthermia" or any term need be applied to the type of patient described. There appears to be no more reason to do so than to apply the term "habitual bradycardia" to normal persons with an average pulse

rate of 60. They simply represent a class of individuals whose average temperature levels fall within the upper limits of the normal range of variation.

SUMMARY

A group of sixteen women whose oral temperature reached levels slightly higher than 37 C (98.6 F) for years was studied to determine whether or not infection or other organic disease was present to cause the fever. Five of those examined were apparently normal healthy women, but the rest were regarded as neurotic. The temperature in each case reached levels over 37 C (98.6 F) daily for months or years but seldom exceeded 37.8 C (100 F) unless actual infection or other known cause intervened. Complete physical examination, long and repeated observation, roentgenographic studies and laboratory and biologic tests failed to reveal an underlying cause for the hyperthermia. It was concluded that a certain proportion of normal individuals have temperatures regulated at levels slightly higher than 37 C (98.6 F) and that temperature at these levels is often found in neurotic persons.

1025 Walnut Street.

ABSTRACT OF DISCUSSION

DR. A. C. ERNSTENE, Cleveland. Dr. Reimann has emphasized that his observations are not intended to offer a common diagnostic refuge when one is confronted with the problem of a long continued unexplained fever. The cases he has studied belong to a relatively small group, and in this group the procedure of repeated periodic observations that he has followed should be adopted. In the study of prolonged low grade fever, the erythrocyte sedimentation rate is of great value. As long as the rate is elevated, fever must be assumed to be due to an organic cause. On the other hand, a normal sedimentation rate does not exclude the presence of organic disease. In many individuals, for instance, in whom the weight of evidence indicates the presence of chronic undulant fever, the erythrocyte sedimentation rate is normal. In the study of prolonged low grade fever, special consideration must be given to the possible presence of chronic brucellosis, for the diagnosis of this condition is frequently difficult. Specific agglutinins may no longer be present in the blood serum when the patient is first seen. The intradermal test with undulant fever vaccine is a helpful diagnostic aid, but the results must be interpreted with care. The opsonocytophagic index is also of value. The length of time Dr. Reimann has had his patients under observation is sufficient to exclude tuberculous disease as a possible cause of the elevation in temperature. When tuberculosis is responsible for prolonged low grade fever, the true state of affairs either becomes manifest within a period of a few months or the fever subsides. In the past, considerable attention has been paid to focal infection as a possible cause of persistent low grade fever. Authenticated instances, however, in which the removal of foci, such as infected teeth or tonsils, have resulted in disappearance of the fever, are suggestively uncommon. It is probable, therefore, that focal infection does not cause prolonged low grade fever. Finally, the question arises whether one is justified in making a diagnosis of physiologic fever and dismissing the patient. In the absence of symptoms, I believe that such a course may be safely adopted, provided the patient has been under observation for not less than one year.

DR. RUSSELL M. WILDER, Rochester, Minn. Dr. Reimann has made clear that the temperature of the normal human being, in health, fluctuates to a certain degree. This, of course, is not surprising. There are no physiologic constants that are really constant. The rate of the heart, the rate of respiration and the basal metabolic rate, which are called constants, all show more or less fluctuation. It would seem, however, that the range of fluctuation in the case of temperature is less than in these other physiologic constants, and that therefore when deviations are seen from what are regarded as normal temperature one ought to be extremely hesitant to conclude that such a deviation represents a normal fluctuation. The temperature of the body

9. Saathof, A. Döblin, A. Zur neurogenen Temperatursteigerung. Berlin. klin. Wchnschr. 49: 2081-2083, 1912. Santos, R. N. Ueber die Neuropathogene Hyperthermie. Med. Klin. 27: 1273-1274 (Aug. 28) 1931. Other references are given in papers referred to in footnote 8.
10. Lee, R. I. Thyroid Dysfunction as a Cause of Fever. M. Clin. North America 10: 1353-1355 (March) 1927.
11. Haines, S. F. and Mussey, R. D. Certain Menstrual Disturbances Associated with Low Basal Metabolic Rates Without Myxedema. J. A. M. A. 108: 557-559 (Aug. 24) 1935.

is a resultant of a rate of production of heat by metabolism and the rate of its elimination. Either of these processes may be affected by peripheral influences, but both of them in the case of warm blooded animals, are under the regulatory control of some center or centers in the brain or brain stem. Thus if the spinal cord is severed in a warm-blooded animal, the thermostatic regulation exercised from above disappears and the homeothermic organism becomes poikilothermic. I am not informed whether the brilliant investigations of Dr. Ranson at North western with the Horsley-Clark stereotaxic instrument, by means of which he is exploring various regions in the sub-thalamic region have revealed the location in the diencephalon of a thermic center but that such a center exists is evident from the frequent occurrence of fever after surgical operations on the head and after other injuries to the base of the brain. Also the effect of the antipyretics is accounted for by central action. Occasionally cases are encountered in which hyperthermia follows infectious lesions of the brain such as those of epidemic encephalitis or poliomyelitis. In such cases the general toxicity of the infecting organism is not such as to be responsible for causing much fever, and yet fever occurs and may persist for months or even years. It is recognized that encephalitis may leave no residues and frequently does not leave the characteristic Parkinson type of residue. We ought to think of the possibility of lasting injuries to thermostatic centers in the brain stem by previously unrecognized encephalitic infection as an explanation at least of some cases of hyperthermia of supposedly normal individuals.

POLIOMYELITIS

PRESENT KNOWLEDGE AND ITS BEARING ON CONTROL

J. P. LEAKE, MD

Medical Director U. S. Public Health Service
WASHINGTON, D. C.

On Saturday, May 14, 1796, just one hundred and forty years ago today, Dr. Edward Jenner performed his first vaccination against smallpox. It is fitting that we pay tribute on this date to this most successful of measures in specific disease prevention while we are considering the prevention of a disease in some respects similar and in some very different from the disease against which Jenner led the way. The slow development of Jenner's thoughts and work in his campaign may give us heart when we consider the present lack of effective control of poliomyelitis. Neither should we be discouraged if some of our steps are false. Jenner was badly mistaken in more than one regard and the fierce devotion with which the friends of his procedure fought for every detail of his views has obscured the truth and hindered full prevention. The need for revaccination was combated by Jenner and his direct followers. The credit for setting the world right in this respect cannot be centered on one person though Goldson in 1804 was probably the first to announce discontinuation in the protective action of vaccination with time. In 1851 fifty-three years after Jenner's announcement the National Vaccine Establishment of England declared that revaccination was incorrect in theory as it was uncalled for in practice. Even the first description of the immediate or immune reaction on revaccination usually credited to Jenner belongs rather to Jenner's friend James Bryce¹ of Edinburgh whose careful work on vaccination first published in 1802 has been pointed out by Dr. George

Weaver of Chicago. Bryce also described the accelerated or vaccinoid reaction on revaccination, while Jenner's note was limited to an early reaction after inoculation with smallpox itself.

In connection with today's Jennerian anniversary, it might be well to remember that the greatest contribution of this century to the study of vaccination was made by Dr. Clemens Pirquet² of Vienna. He simply observed his vaccinations and revaccinations daily until the inflammation had completely subsided and he recorded them by actual measurement.

Numerically, poliomyelitis is not a large problem in comparison with other infectious diseases. For the last three years for which mortality data are available throughout the registration area poliomyelitis has accounted for only about 800 deaths a year, 'epidemic' encephalitis about 1,000, 'nonepidemic' encephalitis about 1,500, tetanus about 1,200, epidemic meningitis about 1,500, tuberculous meningitis about 2,200, other forms of meningitis about 2,100, erysipelas about 2,000, scarlet fever about 2,500, dysentery from 2,000 to 3,000, diphtheria about 5,000, typhoid about 4,300, malaria from 1,500 to 2,500, whooping cough from 4,500 to 7,500, syphilis 11,000, gonorrhea 1,000, tuberculosis about 75,000, and automobile accidents from 28,000 to 36,000.

As to the number of cases, it has been customary to think that for the greater part of the United States there are in round numbers ten paralytic cases a year per hundred thousand of population, counting as paralytic those with definite localized weakness, even though the weakness might be transient and often not reported. This estimate is based on one of the first house-to-house surveys undertaken of an entire community for past illness³ and on other groups of data all too small or localized to be very reliable. It is to be hoped that this year's health survey⁴ will give a larger body of figures on which a more accurate estimate can be made. In nonepidemic times, reporting is irregular. Except Scandinavia, all of Europe appears to have definitely less of the disease than the United States and the central part of our own country less than the seaboard. Declared cases are fewer in the warmer belts than in the North. One of the most intense epidemics on record was on the equator, on an isolated volcanic remnant called Nuru or Pleasant Island, 8 square miles in area and holding 2,300 people, 200 miles from the nearest still smaller island, 2,500 miles from Sydney, Australia, and 4,000 miles from Hong Kong. There were 700 cases, a rate of 30,000 per hundred thousand but only a part were paralytic. The natives chiefly were affected, but the Chinese and Europeans who were working for a British phosphate company and had come in contact with the outside world were almost completely spared. In contrast to the usual age distribution of poliomyelitis, only a few patients were under 12 years of age. This epidemic and a similar tendency toward more intense incidence and occurrence among older age groups in rural epidemics than in cities, form part of the reason for believing that immunization without obvious infection is a valuable prophylactic which is missed by allowing our children to lead too segregated a life in nonepidemic times.

² Pirquet, Clemens. *Klinische Studien über Vakzination und lokale Allergie*. Leipzig and Vienna: Franz Deuticke, 1917.

³ Leake, J. P. *Report on the Health Survey of the Winter Outbreak of Poliomyelitis in Elkin, W. Va.* *Pub. Health Rep.* 72: 179 (Nov. 1934).

⁴ *The New Health Survey* (Government Services). J. A. M. A. 105: 1127-1132 (Oct. 6, 1934).

⁵ Mulder, A. *Die epidemisch auftretende Erkrankung des Nervensystems und Nerven*. *Arch. f. Schiffs- u. Tropenheilk.* 14: 535-543 (No. 17, 1910).

¹ Read before the Section on Preventive and Industrial Medicine and Public Health at the Fifty-Seventh Annual Session of the American Medical Association, San Antonio, Tex., May 14, 1931.

² Bryce, James. *Practical Observations on the Formation of Calves and the Use of the New Method of Vaccination in the Prevention of Smallpox*. London: J. and A. Churchill, 1802.

From the spotty fashion in which cases appear even in epidemics, usually without traceable relation to one another or to a credible common source of infection, it becomes almost impossible to formulate a theory consonant with the observed distribution of the disease which does not include carriers as the most important means of spread. If the effective carriers were persistent, it would appear that more frequently a trail would be left through a series of cases pointing with suspicion to one person. In this as in other angles of the disease, we wish that the light were clearer, but we should not desist from acting on the basis of such light as is available.

The marked seasonal wave of poliomyelitis has suggested two modes of spread—by the gastro-intestinal tract, as in some other infections of warm weather, and by insects. The frequency of gastro-intestinal symptoms at onset has also suggested the former mode of spread. Evidence from nature would be hard to secure to refute this, but recent work in various hands with monkey cord virus gives strong support to the idea that the infection is transmitted in nature through the olfactory portion of the nasal mucosa and in fact through the nerve cells themselves. As negative evidence against gastro-intestinal infection the experiments of Clark, Roberts and Preston⁶ are persuasive. Susceptible monkeys could not be infected by being fed virus or by having it injected into an isolated intestinal loop, yet the feces of these monkeys were later proved infectious.

The fact that an epidemic of typical intensity, spread and clinical characteristics occurred during a West Virginia winter when observations could eliminate ordinary summer insects as vectors is likewise persuasive that such insects play no necessary part in the spread of poliomyelitis in spite of its usual summer prevalence.

It is generally believed, on the basis of repeated isolation of a filtrable virus from the affected spinal cords in human cases, causing typical symptoms and lesions in monkeys and monkeys only, by intracranial inoculation and particularly by intranasal application, that this ultravirus is the true cause of the disease.

The site of invasion in meningococcal meningitis is believed to be grossly similar to that in poliomyelitis, and both diseases are believed to be spread largely by carriers, yet the one disease is caused by an easily visible invader and the other by an ultravirus. Most infections with ultraviruses are not only intracellular but propagated in the fixed cells of the body. This forms an array for combat different from that presented by a parasite of the surface the fluids or the wandering cells of the body. It is probable that very minute bodies, in addition to having the power to enter cells, rather than merely entering fluids and intracellular spaces, are taken up very rapidly. It is also possible that immune substances in the body fluids which occur naturally or are stimulated artificially are of less account in actual defense than when the microscopic foe is more visible.⁸ Such considerations of special affinity for cells on the part of ultraviruses has led Goodpasture⁹ to remark that "it is especially important for investigations to be undertaken in attempts to alter the cellular media by chemical means in the hope of modifying the course of an infection by viruses or of

preventing infection completely by rendering normally susceptible cells artificially insusceptible."

To what practical action, then, does this consideration of the disease lead? Obviously against any radical or otherwise disastrous procedures. In spite of the general dread, parents should realize that the numerical chance of affliction is small. Reasonable precautions against needless human contacts during epidemic seasons are wise. So far as a comparison with control individuals pointed, in Los Angeles in 1934 there was no general danger from swimming pools or beaches. A history of overexertion preceding an attack has often been noted in cases of poliomyelitis. That this may be an important hint for prevention is suggested in the Los Angeles epidemic by the fact that with comparable control individuals such a history could be obtained much less frequently than with individuals attacked by the disease.

Full reporting, in this as in every other disease, is the first step in organized control of the situation. In this connection it is strongly advised that physicians, in reporting each case, report it as paralytic or non-paralytic, that is, whether or not any definite local weakness can be detected. Within three days after the first symptoms most patients who are to be paralytic have given evidence of weakness, and in the others the report can be amended. Every case should be designated as paralytic or nonparalytic. Only in this way can comparison be made from week to week, place to place or season to season. In the 1916 epidemic and preceding it, all but a few reported cases were paralytic. In 1931, 70 per cent of the New York City cases were paralytic, in 1935 about 50 per cent in Albemarle County, Va., in the same year, about 14 per cent, in Denmark in 1934, 14 per cent with only 3 per cent in Haderslev County.¹⁰

In addition to these discrepancies, the recent recognition of conditions similar to nonparalytic poliomyelitis but of different causation, calls for such differentiation. The Economo type A encephalitis still occurs, as well as the so-called summer encephalitis, or type B Lymphocytic choriomeningitis, the virus of which was discovered by Armstrong¹¹ and also found by Rivers¹² and Traub¹³ may easily cause confusion. Still more similar to nonparalytic poliomyelitis is the meningo-encephalitis, 150 generally mild cases of which occurred last summer within about six weeks in a town of 10,000 in south-central Pennsylvania. Armstrong and Wooley¹⁴ have found this different immunologically from lymphocytic choriomeningitis in that the serums from recovered patients have no protective power against that virus. The possible presence of all these confusing conditions in one locality is reason enough for such differentiation as is practicable. To revert to the Jennerian anniversary and Dr Pirquet's contribution. Pirquet merely observed completely, without prejudice, and recorded from day to day. So by detailed watch of the muscular strength not only is accuracy of diagnosis enhanced in poliomyelitis but treatment is improved and perhaps some day prevention may be achieved. In summary, though undue alarm should be allayed in the prevalence of this

6 Clark, P. F., Roberts, D. J. and Preston, W. S. Passage of Poliomyelitis Virus Through the Intestinal Tract. *J. Prev. Med.* 6: 47-58 (Jan.) 1932.

7 Rake, Geoffrey. Absorption Through the Nasal Mucosa of Mice. *Proc. Soc. Exper. Biol. & Med.* 34: 369-371 (April) 1936.

8 Ohitsky, P. K. and Cox, H. R. Active Immunization Against Poliomyelitis. *J. Exper. Med.* 63: 117 (Jan.) 1936.

9 Goodpasture, E. W. Intracellular Parasitism and the Cytoprotopism of Viruses. *South. M. J.* 29: 302 (March) 1936.

10 Jensen, Claus. The 1934 Epidemic of Poliomyelitis in Denmark. *Proc. Roy. Soc. Med. Sect. Path.* 28: 1014 (June) 1935.

11 Armstrong, Charles, and Lillie, R. D. Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by a Virus Encountered in Studies of the 1933 St. Louis Encephalitis Epidemic. *Pub. Health Rep.* 49: 1019 (Aug. 31) 1934. Armstrong, Charles and Dickens, P. F. Benign Lymphocytic Choriomeningitis (Acute Aseptic Meningitis). A New Disease Entity. *ibid.* 50: 831 (June 21) 1935.

12 Rivers, T. M. and Scott, T. F. M. Meningitis in Man Caused by a Filtrable Virus. *Science* 81: 439 (May 3) 1935.

13 Traub, Erich. A Filtrable Virus Recovered from White Mice. *Science* 81: 298 (March 22) 1935.

14 Armstrong and Wooley. Personal communication to the author.

disease in epidemic intensity, it is reasonable to abstain from unnecessary contacts, even with the well, to guard the especially susceptible ages against excessive strain, and to report suspicious illnesses promptly, but with a differentiation as to whether they are paralytic or non-paralytic. For the present the prospect of the discovery of a vaccine that will be highly preventive and at the same time relatively harmless is small, and chemical prophylaxis by means of local applications should be considered still in the trial stage.

ABSTRACT OF DISCUSSION

DR. JAMES D. TRASK, New Haven, Conn. Dr. Leake, in the epidemic on the island of Nauru, was a strain of the virus of poliomyelitis recovered? My experience with poliomyelitis has been gained by following Dr. Leake's footsteps, that is, by making house to house visits in field studies and this work has been done with Dr. Paul. Our first experience was that it was relatively easy to get the virus from examples of abortive poliomyelitis, provided nasal washings were taken the first two days of the disease. Thus, in 1931 we had two successes out of five attempts. Since then we have tried with vigor in each epidemic, to detect the virus in nasal washings from all types of patients acutely ill with poliomyelitis and have had only one more success. In the literature there are eleven satisfactory examples of recovery of the virus from patients and three examples of the recovery of the virus from the nose and throat of 'healthy carriers', therefore there is little direct experimental evidence that this disease is actually transmitted by means of direct contact from nose to nose in man. Many people have said that the lack of success in finding the virus, in patients and contacts, is due to the lack of satisfactory methods. This may be the explanation but the last time we recovered the virus from nasal washings Dr. Paul saved the washings in glycerin, and as late as 100 days from being collected a mere fleck of glycerolated mucus was sufficient to infect monkeys with poliomyelitis. So one can say that in certain instances the method is extremely good and one should question very much whether it is satisfactory to keep on thinking that nose to nose is the method of transmission. It is true for example that, in yellow fever nose to nose transfer is possible with the virus under laboratory conditions.

DR. SIDNEY D. KRAVIER, Brooklyn. Dr. Leake's figures giving the fatalities of the various infectious diseases bring out most clearly the relative importance of these diseases when compared with poliomyelitis and should serve to allay much of the fear of this disease. In order to account for the widespread immunity in the normal population the widespread dissemination of virus through the agency of healthy carriers has been assumed. This concept was recently supported by the detection of the virus in the tonsils and adenoids of a 2½ year old child who had not been in contact with a case. Immunization in the normal population is therefore apparently accomplished through the so called subclinical route, much as in diphtheria. Although a number of routes for the entrance of the virus has been suggested, both the experimental and epidemiologic evidence is overwhelmingly in favor of the intranasal route of infection. The ease with which experimental infection can be accomplished by that route in normal animals as opposed to the difficulties in obtaining infection by the gastro-intestinal route tends to support this as the portal of entry of the virus in the natural infection. At present there is no adequate practical procedure for either preventing or treating the disease. Experiments now in progress seem to hold promise that some procedures for active immunization and passive prophylaxis may be devised. In spite of its relative rareness it would still be good public health procedure to have some method available for active or passive immunization against poliomyelitis. More recently it has been suggested that the use of certain chemicals sprayed into the nostril may act as a barrier against infection. This work is still in the experimental stage and adequate evidence must yet be presented that such chemicals have in them elives no harmful effects on the nasal mucosa following prolonged use. It should furthermore be realized that the most which can be hoped from such a method of protection is to shift the age distribution of the disease. As far as is known individuals susceptible to a

disease remain susceptible throughout life unless actively immunized against it. In essence the outcome of such transient nonspecific protection will be to shift the age distribution of poliomyelitis from an urban type in which infection occurs early in life to a rural one in which exposure and infection tend to occur later in life.

DR. PAUL H. HARMON, Chicago. There is some doubt as to whether the epidemic referred to on the island in the Pacific Ocean was truly an epidemic of poliomyelitis because of the rare and exceptional epidemiologic features involved in that epidemic. Dr. Leake is to be commended for bringing out and urging that poliomyelitis be reported in terms of the three variable types of that disease, namely the paralytic, the non-paralytic and the abortive type. Only in recent years has convincing evidence come out that the nonparalytic and abortive types far outnumber the really paralytic types in the proportion of ten to one. This disease should not be minimized because of the fact that in the average epidemic of poliomyelitis the incidence is only 60 to 70 per hundred thousand of population. In the larger epidemics that of New York in 1916 and in certain Midwest areas in 1917, the incidence reached to from 140 to 160 per hundred thousand all reported in terms of paralytic cases. Recently it has been the idea that a good many of the so-called sporadic and endemic cases of poliomyelitis are a result of an imbalance between the carrier state and infectiousness of the virus for the individual. There is already some definite evidence to support such an idea reported by Avcock in the appearance of several instances of poliomyelitis, which followed after a typical incubation period after removal of the tonsils. The appearance of poliomyelitis with a definite incubation period, following overexertion and fatigue, is a common observation. May that not suggest that there are a number of instances of carriers of poliomyelitis in whom the balance between the infection by the virus and the carrier state may not be upset by overexertion or trauma? There is some question as to whether the finding of neutralizing substances in the blood really means immunity to the disease. A certain number of persons who are Schick negative are still susceptible to clinical diphtheria. There is some experimental evidence to support such an idea, which is as follows: The most significant study is the one by Gordon of the University of Chicago, who found that 78 per cent of monkeys that were immune to the disease (possessed antiviral substances) still did not resist intranasal inoculation. From 30 to 40 per cent of individuals who have recovered from clinical poliomyelitis do not have neutralizing substances in their blood, yet is there a person who would not be willing to state that that person is probably immune to reinoculation, if any one was to attempt it? May there not be many strains of poliomyelitis virus producing human infection? Paul and Trask have already studied a few such strains. It is possible that the strains more adapted to the human being produce paralytic cases while nonparalytic cases may be due to a strain more attenuated than the average. My associates and I were able to isolate from the rectal washings in a nonparalytic case a strain that we had great difficulty adapting to monkeys. As far as we were able to pass it, through three generations, it remained nonparalytic. There is even some experimental evidence to show that serum is of value in protecting individuals passively.

DR. EMIL BOGEN, Olive View, Calif. Can Dr. Leake give some explanation why the California epidemic in the last few years did not apparently conform to the previous epidemics? Ours was apparently highly communicable as we could trace the passage of the infection from one case to another in nearly half of the individuals who were reported in Kern County. Incidentally there were numerous instances in which a paralytic case could be traced to a nonparalytic case or vice versa showing that the different types of the disease are not due to different viruses. In the two years over 0.3 per cent were reported as having poliomyelitis in a population of less than 100,000 and there were twenty five deaths in this double epidemic. In the instances of known contacts in the hospital staff at Los Angeles or those ferreted out by the epidemiologist in Kern County nearly 20 per cent of them developed the clinical disease. I wonder whether this is a different virus and whether the individuals there might be expected to show a high incidence of immune bodies against the poliomyelitis virus previously reported by a greater susceptibility to the new virus found there or whether owing to the isolation and

the location of the country, it might be expected that we have there, and might have in other parts of the country, large communities which are more susceptible to poliomyelitis and therefore likely to have it again in epidemic form

DR. J. P. LEAKE, Washington, D. C. The Nauru epidemic was not reported as an epidemic of infantile paralysis, in fact, Dr. Müller, the German colonial physician who reported it, ruled out infantile paralysis because it was not in infants, for one thing. That was a feature epidemiologically different from our ordinary poliomyelitis. The high incidence is unusual, but it was an unusual place, and a difference from ordinary poliomyelitis could be expected. The other epidemics on what has been called virgin soil have not been as well reported as this one in Guam, for example, and one in the Bismarck Archipelago. One cannot compare them accurately, but they seem similar. Later observations on Nauru Island have been reported and the patients of the 1910 epidemic are described as having typical residual deformities of poliomyelitis. I believe it is not generally appreciated what a great difference in reporting this disease occurs in different communities, not only depending on the physicians but also according to the concern and knowledge which the parents have and the population generally. The virus was not isolated in Nauru and it was not isolated in the Windber epidemic. Practically the first case in the latter was fatal, and there were no other deaths. Dr. Harmon spoke of the balance or imbalance between the carrier state and infection. I can think of no better reason for the seasonal occurrence of poliomyelitis than that the prolonged warmth of summer after the experience of a winter season makes people more susceptible. Dr. Bogen has asked about the relative susceptibility of different large communities year after year. It is still an unanswered problem.

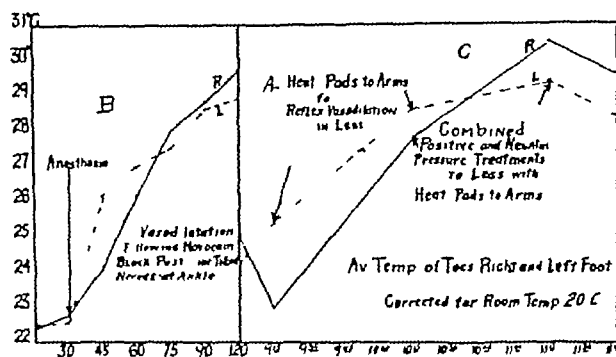
PERIPHERAL CIRCULATORY DISEASES

EFFECT OF ALTERNATING POSITIVE AND NEGATIVE PRESSURE TREATMENTS ON VENOUS BLOOD AND THE SKIN TEMPERATURES PRELIMINARY REPORT

FRANK V. THEIS, M.D.
AND
M. R. FREELAND, Ph.D.
CHICAGO

Alternating positive and negative pressure treatments are of definite clinical value in the treatment of peripheral circulatory diseases.¹ Periodic skin temperature readings indicate that the clinical improvement is accompanied by increased circulation. However, the absence of significant elevations of skin temperatures following individual treatments does not substantiate the belief that clinical improvement is due to increased circulation. More consistent and higher elevation in skin temperatures is produced by vasodilatation as a result of local heat or reflex heat. Still these measures are less effective in producing clinical improvement than is seen with pressure treatments. Landis² found

that 45 C heat to the arms produces maximum reflex vasodilatation of peripheral vessels in the legs. It is evident that pressure treatments alone do not produce maximum vasodilatation. Combining reflex heat and pressure treatments, our routine procedure gives higher peripheral temperature readings than either measure alone, as shown in the accompanying chart. With



Temperature curves. Severe arteriosclerotic peripheral circulatory disease (table 6). Combined pressure treatments and reflex heat (C) produced greater elevation in skin temperatures than could be obtained with maximum vasodilatation due to nerve block (B) or reflex heat alone (A).

maximum peripheral vasodilatation due to the reflex heat, the additional increase in temperature with the combined procedure must be explained on some basis other than vasodilatation. It is apparent that skin temperatures are insufficient to explain the definite therapeutic value of alternating positive and negative pressure treatments.

Clinical improvement and skin temperature changes do not necessarily imply alterations in blood flow. This is especially true with the insignificant temperature changes that frequently follow pressure treatment. With no change in amount or rapidity of blood flow, increased oxygen-carbon dioxide exchange in the tissues might account, in itself, for some increase in surface temperatures. At the same time the improved tissue metabolism would contribute to clinical improvement. It seemed to us that a study of the oxygen-carbon dioxide content of the venous blood would provide more reliable information to explain the effect of pressure treatments than could be obtained by skin temperatures. By correlating the information thus obtained with the skin temperature readings, a better comparison could be made as to the relative value of pressure treatments, direct heat or indirect heat, or combined reflex vasodilatation and pressure treatment such as we use as a routine.

Consequently this investigation was undertaken to determine, if possible, the effect of heat, pressure treatments or a combination of the two on the peripheral circulation. The following program was carried out on twenty-five patients either as controls or as various types of peripheral circulatory disease.

1. Skin temperature readings under controlled conditions before and after all treatments.

2. Oxygen-carbon dioxide gas analyses of the venous blood of the extremities before and after one hour treatment with (a) alternating positive and negative pressure to both lower extremities and 45 C heat to the upper extremities, (b) alternating positive and negative pressure to both lower extremities, (c) 45 C direct heat to both lower extremities or to both upper extremities, (d) 45 C heat to the upper extremity for the reflex effect on the lower extremity.

From the Departments of Surgery and Pathology, Presbyterian Hospital and the Rush Medical College of the University of Chicago.

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2. Landis, E. M., and Gibson, J. H. Jr. A Simple Method of Producing Vasodilatation in the Lower Extremities. *Arch. Int. Med.* 52: 785-808 (Nov.) 1933. Vasodilatation in the Lower Extremities in Response to Immersing the Forearms in Warm Water. *J. Clin. Investigation* 11: 1019-1036 (Sept.) 1932.

3 Total body metabolism tests and oxygen consumption per minute before and after one hour treatments with alternating positive and negative pressures to both lower extremities and heat to both upper extremities

PROCEDURE

Skin temperature readings were taken with the Tyco thermom². The patients rested in bed for one hour with the lower extremities slightly raised to the level

obtained as far as possible from the internal saphenous vein or one of its branches in the upper part of the leg and from the same site before and after treatment. The blood was withdrawn under oil, without the use of a tourniquet, and kept in a refrigerator until examined. Analyses were made as quickly as possible after the blood was withdrawn. In a few instances repeated determinations were made on the same patient. When the condition of the veins made withdrawal of the blood

TABLE 1—Effect of One Hour Positive and Negative Pressure Treatment to the Lower Extremities with 45 C Heat to Arms on the Oxygen-Carbon Dioxide Content of the Venous Blood and Temperature Changes of the Toes

Diagnosis	Case	Date	Oxygen Capacity Volume per Cent	Arms				Legs				Change in Average Skin Temperature of Toes	Perspi- ration	Total Hours of Treat- ment
				Oxygen per Cent of Saturation		Carbon Dioxide Vol. per Cent		Oxygen per Cent of Saturation		Carbon Dioxide Vol. per Cent				
				Before	After	Before	After	Before	After	Before	After			
				Before	After	Before	After	Before	After	Before	After			
Controls	1 Mr C	1/28	18.8	75.29	98.0	44.77	38.37	70.9	71.9	44.36	43.27	+6.5 C	0	1
		4/2	17.33	77.0	38.8	47.32	40.4	86.0	89.7	44.6	43.32	+3.4 C	++	2
	2 Mr J	2/27	22.73	75.15	73.6	30.28	32.10	38.4	77.4	27.5	28.6	+2.4 C	0	1
	3 Mr B	4/17	17.27	92.8	82.6	45.06	47.1					+2.0 C	0	1
Senile arterio- sclerosis	4 Mr R	7/5	13.19	79.07	95.6	26.09	20.18	48.4	24.26	6.88	7.00	+1.0 C	++++	18
		1/2	23.36	77.1	8.7	48.77	20.1	48.6	90.0	45.7	74.42	+3.5 C	++	7
		4/8	19.0	26.0	11.7	48.4	40.37	47.6	68.8	45.8	41.8	+3.6 C	++	46
	5 Mr K	2/20	14.64	19.5	46.4	33.0	25.84	20.37	66.2	22.36	30.81	-0.5 C	++	3
Diabetic arterio- sclerosis	6 Mr G	4/2	27.68					35.48	63.8	71.8	70.86	+2.7 C	++++	18
	7 Mrs D	4/29	19.73					64.0	91.3	48.9	44.0	+0.8 C	++++	
		4/30	19.2					71.38	71.0	32.86	48.01	+0.3 C	++++	
	8 Mrs D													
Buerger's disease	9 Mr P	3/7	21.65	4.0	37.4	27.93	25.12	96.6	99.1	22.5	22.5	+1.0 C	++	
		3/11	16.16					86.8	88.5	19.0	42.89	+2.2 C	+	1
		3/30	25.14					68.0	88.6	43.0	79.0	-0.8 C	++	4
	10 Mr M	4/14	21.29	72.6	89.0	45.02	42.32	76.0	94.0	39.0	74.0	+0.4 C	+	2
	11 Mr I	2/27	22.73	75.15	73.6	30.28	32.10	38.4	77.42	27.5	28.6	+1.5 C	0	1
	12 Mr C	3/10	Insufficient blood											
			Vol. per Cent											
								23.76	21.49	42.07	42.8	+0.5 C	++	1
	13 Mr B	7/16	23.0	44.2	34.0	48.8	48.33	96.7	18.0	39.77	39.03	+1.75 C	++	
		4/26	17.04					77.27	79.77	47.0	41.92	+0.3 C	++	
	14 Mr R	2/20	20.28					93.8	94.0	17.74	19.6	+3.7 C	+++	2
		2/20	16.80	76.3	77.8	18.55	21.09	90.8	91.0	20.84	29.11	-2.0 C	++	6
Neuro- circulatory atrophic arthritis	15 Mrs A	1/27	22.27	84.8	98.8			84.5	98.8	14.75	11.67	+4.5 C	0	6
	16 Mr B	1/2	21.7	84.0	98.3	20.97	16.08	84.4	89.4	20.2	17.58	+0.75 C	0	6
	17 Mr A	3/11	21.01	81.4	98.3	46.21	47.76	68.8	90.0	43.13	41.0	+2.3 C	+++	42
	18 Mr L	4/1	16.23	97.6	77.1			46.55	47.18	30.3	31.0	+2.4 C	++	22
	19 Mrs B	4/21	14.1					81.7	77.6	41.3	45.5	+6 C	++	7

TABLE 2—Effect of One Hour Alternating Positive and Negative Pressure Treatment on the Oxygen-Carbon Dioxide Content of the Venous Blood of the Legs and Temperature Changes of the Toes

Diagnosis	Case	Date	Oxygen Capacity Volume per Cent	Legs				Change in Average Skin Temperature of Toes	Local treatment	Total Hour of Treat- ment
				Oxygen per Cent of Saturation		Carbon Dioxide Vol per Cent				
				Before	After	Before	After			
Control	1 Mr M	4/16	21.08	67.46	97.1	40.4	41.1	+2.0 C	0	1
	2 Mr D	4/30	18.04	91.1	89.42	47.6	46.0	-0.8 C	++	2
Senile arteriosclerosis	3 Mr R	4/7	17.5	92.0	91.9	41.29	41.27	+0.6 C	0	4
Diabetic arterio sclerosis	4 Mr C	4/20	18.7	90.2	86.29	49.7	41.27	+0.7 C	0	10
	5 Mrs D	4/30	17.9	35.7	35.8	41.93	41.7	-0.5 C	+++	16
Buerger's disease	6 Mr M	4/1	20.7	70.8	90.0	47.2	41.7	+0.9 C	0	29
	7 Mr B	4/22	19.26	88.8	76.4	44.31	44.31	+2.7 C	0	19
	8 Mr I	4/27	23.4	97.7	97.7	41.2	41.2	+1.7 C	+++	70
Neurocirculatory atrophic arthritis	9 Mrs S	4/1	15.2	2.0	25.0	48	48	-0.2 C	+	10
	10 Mr C	4/30	Insuff. blood							
	11 Mr I	4/21	17.1							
				Vol per Cent						
				15.21	14.24	4.2	4.2	+0.7 C	+	39
				70.1	69.2	4.2	4.2	-0.7 C	0	47

of the heart. This is the position used in giving the pressure treatments. After stabilization at room temperature one or more skin temperature readings of the toes and feet were taken before and after treatment. All skin temperature readings were corrected for 20 C room temperature.⁴

Gas analyses of the blood were obtained by Van Slyke's manometric method.⁵ The venous blood was

difficult or the patient objected to repeated tests only one or two determinations were made.

Total body metabolism tests were obtained by the Tissot open method⁶ (forty-eight tests on fifteen patients), the Haldane gas analysis being used for oxygen-carbon dioxide determinations. No effort was made to obtain basal conditions. However the patients rested at room temperature for one hour before skin temperatures and metabolism tests were taken. Following one hour pressure treatments to both lower extremities

¹ Scott, W. J. M. An Improved Electrothermal Instrument for Measuring Surface Temperature. *J. A. M. A.* 94, 1927 (June 21) 1933.
² Merton, J. L., and Scott, W. J. M. Methods of Estimating the Degree of Systemic Vasoconstriction in Peripheral Vascular Disease. *New England J. Med.* 204, 66, 9/2 (May 7) 1931.
³ Freeland, J. J., and Van Slyke, D. D. Quantitative Clinical Chemistry. *McGraw-Hill Book Co.* 1922, vol. 1.

⁴ Boothby, W. M., and Sarfield, Irene. Laboratory Manual of the Technique of Blood Metabolic Path Determinations. Philadelphia: W. B. Saunders Company, 1933.

ties and heat pads (45 C) to the arms it was possible to determine changes in total consumption of oxygen and elimination of carbon dioxide

Because of the difficulties in getting patients to cooperate in such an extensive investigation, this preliminary report does not include all types of circulatory diseases. The arthritic patients were selected by Dr E E Irons because of neurocirculatory manifestations. He believed that this group might be benefited by improved peripheral circulation.

RESULTS

Skin temperature readings varied with the form of treatment and the type and severity of the circulatory disease. Pressure treatments alone produced the least

Generally the most marked elevations in skin temperatures occurred in the absence of perspiration.

Gas analyses of the venous blood was made before and after one hour treatments on twenty-five patients. A total of 287 determinations were made on seventy-three specimens of venous blood.

Under ordinary conditions the character of the venous blood depends on the amount of oxygen absorbed from the arterial blood as it passes through the capillary bed and on the amount of carbon dioxide eliminated into the blood stream. Normally the arterial blood has from 94 to 96 per cent of its hemoglobin saturated with oxygen. Lundsgaard⁷ found that in resting subjects the venous blood has an oxygen saturation of from 60 to 85 per cent. The more rapidly

TABLE 3—Effect of 45 C Direct Heat to the Lower Extremities on the Oxygen-Carbon Dioxide Content of the Venous Blood and Temperature Changes of the Toes

Diagnosis	Case	Date	Oxygen Capacity Volume per Cent	Arms				Legs				Change In Average Skin Temperature of Toes	Perspi- ration	Total Hours of Treat- ment
				Oxygen per Cent of Saturation		Carbon Dioxide, Vol per Cent		Oxygen, per Cent of Saturation		Carbon Dioxide Vol per Cent				
				Before	After	Before	After	Before	After	Before	After			
Controls	1 Mr D	4/23	17.5					75.00	93.00	45.73	44.73	+2.0 C		1
Senile arterio- sclerosis	2 Mr R	1/13	22.4	1.14	69.0			80.5	91.2	7.1	34.4	2.1 C	+++	4
Diabetic arterio- sclerosis	3 Mrs L	4/28	20.19					82.7	89.1	40.89	44.5	+1.2 C	+++	157
	4 Mr G	4/28	16.72					94.3	94.73	47.90	40.25	-1.6 C	0	19
Neurocirculatory atrophic arthritis	5 Mr E	2/24	19.42					87.1	94.0	7.04	28.36	+2.0 C	+++	100

TABLE 4—Effect of 45 C Heat to the Arms on the Oxygen-Carbon Dioxide Content of the Venous Blood of the Lower Extremities and Temperature Changes of Toes

Diagnosis	Case	Date	Oxygen Capacity Volume per Cent	Arms				Legs				Change in Average Skin Temperature of Toes	Perspiration	Total Hours of Treatment
				Oxygen per Cent of Saturation		Carbon Dioxide Vol per Cent		Oxygen per Cent of Saturation		Carbon Dioxide Vol per Cent				
				Before	After	Before	After	Before	After	Before	After			
Senile arterio-sclerosis	1 Mr R	4/6	22.72	41.1	69.2	43.4	37.7	65.2	66.0	39.0	42.1	+ 3 C	0	4
Diabetic arterio-sclerosis	2 Mr G	4/23	14.5					83.4	87.4	47.53	47.53	-0.6 C	0	21
Buerger's disease	3 Mr B	3/12	27.34	17.0	11.0	46.00	41.5					+1.0 C	0	130
	4 Mr P	4/22	20.07					94.0	97.36	43.70	40.21	-3.6 C	0	67
Neurocirculatory atrophic arthritis	5 Mrs S	4/9	13.6	68.0	63.0	47.00	44.87	61.1	66	47.6	44.57	+0.6 C	—	1

significant elevation in skin temperatures (table 2). In this series three patients had decreased readings from 0.2 to 2.5 degrees C and eight had elevated temperatures from 0.3 to 2.7 degrees C. The majority of these elevations were less than 1 degree C. Heat directly applied to the lower extremities (table 3) or to the upper extremities for reflex vasodilatation (table 4) produced more uniform elevation in skin temperatures. One arteriosclerotic patient with severe diabetes had decreased temperatures after both forms of heat therapy. With direct heat a decline of 1.6 degrees C was recorded and with reflex vasodilatation 0.6 degree C. All other readings were elevated 1 degree C or more, direct heat producing a maximum of 2 degrees C and reflex heat 4.6 degrees C. Combined reflex vasodilatation and pressure treatments produced greater elevation in the temperatures than any other form of treatment. Only three of twenty-six determinations showed decreased readings. These declines were accompanied by considerable perspiration.

the arterial blood passes through the capillary bed, the less oxygen is removed and the less carbon dioxide is absorbed per unit volume of venous blood. Accordingly, as the circulation is increased the oxygen-carbon dioxide content of the venous blood approaches that of the arterial blood. This is accompanied by elevated temperature readings. By immersing the forearms in water at 45 C, Meakins and Davies⁸ found that the rate of flow is so accelerated that the oxygen content of the venous blood is practically identical to that of arterial blood. With the flow retarded more oxygen is removed, more carbon dioxide is absorbed, and the temperature decreases.

Local tissue metabolic changes can alter likewise the oxygen-carbon dioxide ratio of the venous blood.

⁷ Lundsgaard C. Studies of Oxygen in Venous Blood. I. Technique and Results on Normal Individuals. *J Biol Chem*, 33: 133-144 (Jan.) 1918.

⁸ Meakins J C. and Davies H W. Observations on the Gases in Human Arterial and Venous Blood. *J Pathol & Bact* 23: 451 (Dec.) 1920.

Goldschmidt and Light⁹ observed that sufficiently intense cold reduces the amount of oxygen removed from the venous blood. They attribute this increased oxygen content of the venous blood to decreased local tissue metabolism. Accordingly the same changes in the oxygen-carbon dioxide content of the venous blood are found with either a rapid blood flow or a lowered tissue metabolism. However, increased circulation as a result of vasodilatation or augmented collateral circulation produces a rise in skin temperatures, while decreased tissue metabolism in all probability is accompanied by lowered temperatures. The reverse situation

patients (table 1). All but the controls showed marked evidence of peripheral circulatory disease. In twenty of the twenty-six determinations there was increased oxygen content of the venous blood and, in all but one of these, elevated skin temperatures. The one patient with a decline in skin temperature perspired considerably, as did almost all of this series. In most instances a corresponding reduction in the carbon dioxide content was found. These results are in agreement with an increased blood flow. However, the increased rate of blood flow as interpreted should bear some relation to the increase in

TABLE 5—*Thrombo-Angitis Obliterans. Comparison of Results of Gas Analyses of the Venous Blood and Peripheral Temperature Changes with Various Forms of Treatment**

Therapeutic Procedure Duration One Hour	Date	Oxygen Capacity Volume per Cent	Oxygen, per Cent of Saturation		Carbon Dioxide Vol per Cent		Change in Average Skin Temperature of Toes	Perspi- ration	Total Hours of Treat- ment
			Before	After	Before	After			
1 Positive and negative pressure treat- ments to legs and heat to arms	3/ 7	21.65	96.6	99.1	22.5	22.3	+1.0 C	++++	5
	3/17	16.16	80.8	88.8	39.8	42.8	+2.2 C	+	15
	3/30	25.14	68.0	88.6	43.05	39.0	-0.5 C	+++	4 ^o
2 Positive and negative pressure treat- ments only	4/28	23.49	89.3	90.54	43.27	41.3	+1.0 C	+++	70
3 45 C heat to arms only	4/ 2	20.67	84.0	97.36	41.79	40.21	+3.6 C	0	67

* This patient Mr P aged 51, had previously had the right leg amputated

TABLE 6—*Severe Senile Arteriosclerotic Peripheral Circulatory Disease in Mr R. Comparison of Results of Gas Analyses of the Venous Blood and Peripheral Temperature Changes with Various Forms of Treatment*

Therapeutic Procedure Duration One Hour	Date	Oxygen Capacity Volume per Cent	Legs				Change in Average Skin Temperature of Toes	Perspi- ration	Total Hours of Treat- ment
			Oxygen per Cent of Saturation		Carbon Dioxide Vol per Cent				
			Before	After	Before	After			
1 Positive and negative pressure treat- ments to legs and heat to arms	3/ 5	13 10	58.4	24.6	6.88	7.59	+1.0 C	++++	18
	3/23	23.36	48.6	90.0	45.75	34.42	+3.5 C	++	33
	4/ 8	19.03	47.6	68.8	45.8	41.8	+3.6 C	++++	46
2 Positive and negative pressure treat- ments only	4/ 7	17.8	82.55	91.9	41.39	40.37	+0.6 C	0	45
3 45 C heat to arms only	4/ 6	22.72	60.2	56.5	39.95	42.1	+3.3 C	0	43
4 45 C direct heat to legs	4/13	22.4	80.37	91.3	37.1	34.4	+2.0 C	+	64

TABLE 7—*Severe Diabetic Arteriosclerotic Peripheral Circulatory Disease of the Left Leg. Comparison of Results of Gas Analyses of the Venous Blood and Peripheral Temperature Changes with Various Forms of Treatment**

Therapeutic Procedure Duration One Hour	Date	Oxygen Capacity Volume per Cent	Legs				Change In Average Skin Temperature of Toes	Perspi- ration	Total Hours of Treat- ment
			Oxygen per Cent of Saturation		Carbon Dioxide Vol per Cent				
			Before	After	Before	After			
1 Positive and negative pressure treat- ments to legs with heat to arms	4/25	27.58	50.48	93.8	51.5	39.6	+2.7 C	++++	19
2 Positive and negative pressure treat- ments only	4/20	19.71	90.2	86.91	49.28	43.23	+0.2 C	0	10
3 4 C heat to arms only	4/23	14.5	83.4	87.4	47.33	47.53	-0.6 C	0	13
4 45 C direct heat to legs	4/27	16.72	94.3	84.73	47.09	49.2	-1.6 C	0	18

* This patient Mr G had previously had his right leg amputated

also can occur. With increased metabolism more oxygen is used and more carbon dioxide is produced. The same oxygen-carbon dioxide changes are found with a retarded flow. Local temperature readings are decreased with a retarded flow and may be elevated with increased metabolism. Consequently changes in the oxygen-carbon dioxide content must be correlated with the skin temperature changes. With these possibilities we were able to interpret the results of this investigation.

Combined pressure treatments and reflex heat were used for twenty-six determinations on seventeen

peripheral temperatures. This fact could not be correlated with our observations. The first of our control group had only a slight change in oxygen carbon dioxide content, indicating an insignificant increase in rate of flow. With the recorded 6.5 degrees C elevation in skin temperatures it is more probable that the increased oxygen content of the more rapidly flowing blood was almost completely offset by an increased consumption of oxygen, owing to greater tissue metabolism. When the examination was repeated five days later a slightly greater oxygen saturation was found with only 3.4 degrees C elevation in temperature. During the latter treatment considerable perspiration developed, while with the 6.5 degrees C rise in tem-

9 Goldschmidt, S., and Light, A. B. The Effect of Local Temperature upon the Peripheral Circulation and Metabolism of the Tissues as Revealed by the Gaseous Content of the Venous Blood. *Am. J. Physiol.* 73: 146-152 (June) 1923.

perature the limbs remained perfectly dry. The difference between the two temperature readings may be some indication of the effect of perspiration on the peripheral temperatures.

In another control case, more than 100 per cent increase in oxygen content occurred with only 2.4 degrees C rise in temperatures. Instead of the inverse change the carbon dioxide content was increased. The same condition of increase in both oxygen and carbon dioxide was found also in three patients suffering with severe peripheral circulatory disease. This was due probably to accumulation of carbon dioxide in the tissues as a result of the disease. In five cases of this series the venous blood from the heated arms showed a similar disagreement, one of which occurred both in the arms and in the legs. This was a case of severe arteriosclerotic disease which subsequently, with inten-

decline in oxygen content must signify greater oxygen consumption due to tissue metabolism than was compensated for by any increased flow of blood.

Alternating pressure treatments alone produced changes in the oxygen-carbon dioxide ratio and the skin temperatures, which for the most part indicated increased tissue metabolism (table 2). In this series eight of the eleven cases presented elevated skin temperatures, five of which were under 1 degree C. The highest reading, 2.7 degrees C, occurred in a patient who had received 136 hours of treatment. Except in one control and the patients with Buerger's disease all showed reduction in the oxygen content of the blood following treatment. These results do not substantiate the contention that increased circulation follows pressure treatments. At least in the presence of severe circulatory deficiency the results indicate increased

TABLE 8—Total Body Metabolism Rates, Oxygen Absorption, Respiratory Quotient and Peripheral Skin Temperature Changes Following One-Hour Treatments with Alternating Positive and Negative Pressure Treatments to Legs and Heat Pads to Both Arms

Diagnosis	Case	Date	Basal Metabolic Rate		Percentage Change in Basal Metabolic Rate	Oxygen Absorbed per Minute		Respiratory Quotient		Change in Average Skin Temperature of Toes	Perspiration After Treatment
			Before	After		Before	After	Before	After		
Controls	1 Mr C	3/28	+ 6%	+13%	+ 7%	24.5 cc	261 cc	1.04	0.97	+0.5 C	
	4/ 2		- 2%	+ 3%	+ 5%	23.5 cc	244 cc	0.75	0.89	+3.4 C	++
	2 Mr F J	3/19	+26%	+28%	+ 2%	328 cc	333 cc	0.77	0.70	+2.4 C	0
Peripheral circulation disease—arteriosclerosis	3 Mr I	3/23	+14%	+ 2%	-12%	230 cc	274 cc	0.81	0.81	+8.0 C	++
	4 Mr R	3/ 5	+20%	+24%	+ 4%	261 cc	267 cc	0.77	0.82	+1.0 C	++++
	3/23		+2.7%	+ 0%	-21%	212 cc	270 cc	0.78	0.80	+3.5 C	++
Thrombo angilitis obliterans	5 Mr K	2/20	+ 4%	+ 7%	+ 7%	279 cc	283 cc	0.68	0.76	-0.5 C	++
	6 Mr B	3/12	+12%	+48%	+38%	230 cc	30. cc	1.02	0.95	+1.0 C	0
	3/16		+ 1%	+ 3%	+ 2%	210 cc	222 cc	0.78	0.81	+1.0 C	0
Neurocirculatory atrophic arthritis	7 Mr J J	2/27	- 4%	+ 3%	+ 7%	266 cc	290 cc	0.79	0.87	+1.5 C	+
	8 Mr R	2/20	+ 3%	+11%	+ 8%	224 cc	237 cc	0.79	0.87	-2.0 C	++
	3/12		+20%	+ 8%	-12%	248 cc	219 cc	0.92	1.01	+2.7 C	++++
	9 Mr C	3/10	+16%	+20%	+ 4%	273 cc	284 cc	0.85	0.82	+0.3 C	++
	10 Mr P	3/19	+23%	+10%	-13%	330 cc	295 cc	0.72	0.93	+2.2 C	+
	3/30		+ 5%	+1.2%	+10%	293 cc	321 cc	0.79	0.80	+0.8 C	+++
	11 Mr B	3/16	+56%	+32%	-24%	427 cc	366 cc	0.76	0.74	+1.75 C	++
	3/19		+47%	+31%	-10%	410 cc	361 cc	0.75	0.78	+1.25 C	+
	12 Mr F	2/24	+2.6%	+34%	+ 0%	280 cc	311 cc	0.81	0.78	+3.75 C	+++
	13 Mr A	3/ 2	+12%	+ 7%	- 5%	272 cc	293 cc	0.80	0.74	+3.5 C	++
	3/16		+ 7%	0	- 7%	249 cc	244 cc	0.84	0.80	+2.3 C	
	14 Mr L.	3/23	+ 7%	+10%	+ 0%	221 cc	235 cc	0.77	0.79		
	3/26		+ 0%	+10%	+ 4%	218 cc	278 cc	0.79	0.76		
	4/ 2		+ 1%	+ 3%	+ 2%	206 cc	210 cc	0.79	0.80		
	15 Mr B	3/ 5	+13%	+24%	+11%	319 cc	334 cc	0.81	0.79	+0.75 C	0

sive treatment, had the normal relation in oxygen-carbon dioxide content.

With marked organic occlusion of the peripheral arteries, little change in oxygen-carbon dioxide content followed the initial one hour treatment. Still, almost all the extremities showed some increase in skin temperature. After intensive treatment the changes in oxygen-carbon dioxide content indicated a marked increased rate of flow, but this was not accompanied by any greater increase in skin temperature. In two cases decreased skin temperatures occurred despite oxygen-carbon dioxide changes, indicating markedly increased flow of blood. Both patients had considerable perspiration. It is apparent that skin temperature changes are not entirely reliable and, undoubtedly, perspiration interferes with accurate temperature readings. We believe that higher temperatures would have been recorded if perspiration had not occurred.

Decreased oxygen and increased carbon dioxide content was found in five cases, four of which presented elevated skin temperatures. In one case there was a decline of 2 degrees C, but the entire group perspired. With all patients perspiring and the majority (four out of five) having a rise in skin temperatures, the

utilization of oxygen by the tissues. The minor temperature elevations might be due therefore to the increased metabolism of the tissues treated.

Direct heat was applied to the lower extremities of five patients for its effect on the local circulation (table 3). In four cases there was increased oxygen and decreased carbon dioxide content of the venous blood and increased skin temperature readings of the toes from 1.2 to 2.2 degrees C. This is completely in accord with our interpretation of increased circulation. One patient with the reverse condition (table 7) is suffering with severe diabetic arteriosclerotic disease of the left leg.

Heat to the arms for reflex vasodilatation in the legs was studied on five patients (table 4). In this series four showed increased skin temperature changes of from 1 to 4.6 degrees C. The same patient who had a decline of 1.6 degrees C with direct heat had a 0.6 degree C decline with reflex vasodilatation. Only one patient had a reduction in the oxygen content and increase in the carbon dioxide. With 3.3 degrees C elevation in skin temperatures there must have been greater utilization of oxygen than was supplied by an increase in circulation.

Judging from the results of gas analyses of the venous blood and temperature readings, reflex heat is more effective in producing increased circulation than direct heat or pressure treatments. However, pressure treatments produced more significant evidence of increased utilization of oxygen by the tissues. Reflex heat and pressure treatments combined produced not only the highest elevations in skin temperature but also the most marked changes in the oxygen-carbon dioxide content of the venous blood.

Total body metabolism tests were made on twenty-four patients before and after our routine form of pressure treatments (table 8). Slight changes in total oxygen consumption and total carbon dioxide elimination had no apparent relation to the changes in skin temperature readings. Sixteen showed increased oxygen consumption and eight decreased. Because of the normal factors of error in metabolic determinations, these results do not appear significant. However, in view of the general body relaxation and rest (frequently sleep and relief from pain) during the treatments a lowered oxygen absorption rate could have been expected. The elevated skin temperatures, at least in part, could be the result of increased local tissue metabolism. There is no increase in mouth temperature.

COMMENT

Increased circulation of blood does not explain the clinical improvement that follows treatment of peripheral circulatory diseases with alternating positive and negative pressure. Other therapeutic measures, more effective in increasing peripheral circulation, as determined by elevated skin temperatures, are of definitely less clinical value. On the other hand, Barker,¹⁰ Schwartzman,¹¹ Frey,¹² and others have used tissue extracts with successful clinical results in spite of the absence of demonstrable increased circulation. Nevertheless Landis,¹ Herrmann,¹ Allen and Brown,¹³ de Takats,¹⁴ Conway,¹⁵ and Shipley and Yeager¹⁶ attribute the beneficial results of pressure treatments to increased circulation of blood. Herrmann¹ recently has mentioned that some value of positive and negative pressure treatments might be in improved local tissue metabolism. We believe there is little doubt that improving the circulation in the extremities, especially in the presence of circulatory disturbances, simultaneously influences the oxygen consumption of the tissues. However, our results seem to indicate that alternating pressure treatments primarily effect the oxygen-carbon dioxide exchange in the tissues regardless of whether or not increased circulation occurred.

Barcroft¹⁷ distinguishes between anoxia, which means oxygen want, and anoxemia, oxygen deficit in the blood. In the large majority of patients with peripheral circulatory disease there is no oxygen deficit in the arterial blood. However, at least in the most severe

cases of circulatory deficiency the tissues seem to be unable to utilize the available oxygen supply—an anoxia. According to Peters and van Slyke,¹⁸ the physiologic effect of anoxia is "directly attributable to diminished oxygen tension in the tissues."

Oxygen is carried in the blood by the hemoglobin, an efficient arrangement for increasing the oxygen carrying capacity of the blood. The gaseous exchange in the lungs and tissues is on a physical basis, passing from the regions of higher concentration to those of lower. This is in accordance with the laws of diffusing gases. Elimination of carbon dioxide from the tissues and blood is by the same process. The oxygen in the air which is brought in contact with the blood in the alveoli passes from the place of higher to lower tension. In this way the blood absorbs oxygen to the extent, normally, of 20.9 volumes per cent. From the blood the oxygen then passes to the tissues because of lower oxygen tension. Similarly the carbon dioxide accumulating in the tissues is under greater pressure than is that in the blood. Accordingly the blood absorbs carbon dioxide and carries it to the lungs, where it is expelled because of the still lessened carbon dioxide pressure in the air.

The changes in environmental pressures as a result of pressure treatments seem to be less likely to increase the flow of blood, especially in organic blood vessel disease, than it is to change the oxygen-carbon dioxide tension in the tissues. These changes in tension would effect the diffusion of oxygen from the blood to the tissues and carbon dioxide from the tissues to the blood. In other words, improved local tissue metabolism follows such pressure changes. Less elevation in skin temperatures is produced by this oxidation process than by increasing the flow of blood. The results of this investigation indicate that this actually takes place during treatments with alternating positive and negative pressure.

Since most peripheral circulatory diseases have some vasoconstriction element,¹⁹ heat applied to the arms is an efficient means of producing reflexly maximum vasodilatation in the lower extremities. Therefore the additional elevation in skin temperatures which follow combined pressure treatment and reflex heat indicates that the therapeutic effect of pressure treatments is not due to vasodilatation. Both Herrmann and Landis have suggested recently that some form of heat be used in conjunction with pressure treatments. The results herewith reported provide an adequate explanation for the superiority of the combined form of treatment. Reflex heat produces maximum vasodilatation with an increased circulation, while pressure treatments increase tissue metabolism. In our experience this procedure is the most effective means of relieving the pathologic changes in the tissues due to deficient circulation.

The respiratory function of the skin itself may be an important factor in the clinical improvement that follows pressure treatments. The cutaneous surface is capable of absorbing oxygen from the air and eliminating carbon dioxide. Shaw and Messer²⁰ inferred from the results of their investigation that gases continually pass in and out of the blood by diffusion through the skin. Under ordinary conditions the average amount

¹⁰ Barker, W. W., Brown, G. E., and Roth, Grace M. Effect of Tissue Extracts on Muscle Pains of Ischemic Origin (Intermittent Claudication). *Am. J. M. Sc.* 189: 36-43 (Jan.) 1935.

¹¹ Schwartzman, M. S. Muscle Extract in Treatment of Angina Pectoris and Intermittent Claudication. *Brit. M. J.* 1: 855-856 (May 10) 1930.

¹² Frey, E. K. Circulatory Hormone and Internal Secretion. *München. med. Wchnschr.* 76: 1951 (Nov. 22) 1929.

¹³ Allen, E. V., and Brown, G. E. Intermittent Pressure and Suction in Treatment of Chronic Occlusive Arterial Disease. *J. A. M. A.* 105: 2029-2034 (Dec. 21) 1935.

¹⁴ de Takats, C. C. Obliterative Vascular Disease. Preliminary Report of Treatment with Alternating Negative and Positive Pressure. *J. A. M. A.* 103: 1920-1924 (Dec. 22) 1934.

¹⁵ Conway, J. H. Obliterative Vascular Disease. Report of Fifty One Cases Treated with Passive Vascular Exercises. *J. A. M. A.* 106: 1153-1156 (April 4) 1936.

¹⁶ Shipley, A. M., and Yeager, G. H. Passive Vascular Exercises in the Treatment of Peripheral Circulatory Disease. *Surg., Gynec. & Obst.* 59: 450-455 (Sept.) 1934.

¹⁷ Barcroft, J. Anoxemia. *Lancet* 2: 455 (Sept. 4) 1920.

¹⁸ Peters, J. P., and Van Slyke, D. D. Quantitative Clinical Analysis. Interpretations. Baltimore: Williams and Wilkins Company, 1931, vol. 1.

¹⁹ Brown, G. E. The Treatment of Peripheral Vascular Disturbances of the Extremities. *J. A. M. A.* 87: 379 (Aug. 7) 1926.

²⁰ Shaw, L. H., and Messer, Anne C. Cutaneous Respiration in Man. III. The Permeability of the Skin to Carbon Dioxide and Oxygen as Affected by Altering Their Tension in the Air Surrounding the Skin. *Am. J. Physiol.* 28: 93-101 (Aug.) 1931.

of oxygen absorbed by the skin corresponds to one one-hundredth of the amount absorbed by the lungs²¹ The amount of oxygen that can be absorbed was found to vary according to the temperature and concentration of the gas With a constant oxygen tension in the blood, the rate of oxygen absorbed from the air will vary directly with its oxygen tension Consequently the alternating pressure treatments in changing the oxygen-carbon dioxide tension in the air should influence the respiratory function of the skin The few irregularities in our results in the oxygen-carbon dioxide content of the blood following pressure treatments might be due to this factor

Neurocirculatory disturbances are frequently associated with atrophic arthritis Local treatment for arthritis is directed usually to increasing the circulation For the same reason Rowntree and Adson²² perform sympathectomies with some encouraging improvement in the arthritic condition The increased circulation that follows this surgical procedure relieves the neurocirculatory symptoms, but White²³ reports that in his experience there is little change in the course of the arthritis

The fact that our routine procedure of reflex vasodilation and pressure treatments has given such good clinical results in peripheral circulatory diseases suggested its use in atrophic arthritis associated with neurocirculatory disturbances The increased circulation would relieve the symptoms due to the circulatory deficiency, and the improved local tissue metabolism as a direct result of the pressure treatments might be beneficial to the arthritis Accordingly Dr E E Irons and Dr E M Barton selected a group of cases which most closely met the requirements of Rowntree and Adson²⁴ for sympathectomies Their clinical results will be reported separately

SUMMARY

The purpose of therapeutic procedures for peripheral circulatory disease is to promote increased circulation of blood in the extremities These procedures include hot applications, contrast baths, diathermy, baking, exercises, massage, nonspecific vaccines and, most recently, alternating positive and negative pressure Although these measures are extensively used, little definite information is available as to their relative value Increased skin temperature readings are of some help in estimating the extent of improved circulation This is particularly so following sympathectomy in selected cases of vasospastic disease In the absence of definite elevations in skin temperatures, clinical observations alone have been relied on in determining the success of the therapeutic measures The results of this investigation indicate that the beneficial effects of pressure treatments is on a physiologic basis of increased tissue metabolism

The addition of reflex heat to the pressure treatments has given the best clinical results The heat produces increased blood flow as a result of maximum vasodilatation and the pressure treatments increase the exchange of oxygen-carbon dioxide in the tissues Since the natural course of most peripheral arterial diseases is

progressive, no estimate can be made as to the permanent effect of the pressure treatments The improvement in peripheral circulation must be kept in advance of the disease process Gas analyses for the oxygen-carbon dioxide exchange in the tissues and peripheral temperature readings are of value in determining how frequent and how intensive the treatments should be

Except for the controls and the patients with arthritic neurocirculatory disease, the other patients had severe organic occlusive disease In some of the latter cases, preliminary nerve block²⁵ was done with procaine hydrochloride to establish the fact that our routine combined form of treatment could produce greater elevation in skin temperatures than occurred with maximum vasodilatation Although the results herewith reported are concerned with one hour treatments, subsequent periodic determinations can be accepted as the cumulative effect of the treatments As an index to the cumulative effect, the total number of hour treatments is given in the tables

The respiratory function of the skin may be an important factor in the success of pressure treatments It is interesting that the cutaneous surface is capable of absorbing oxygen from the air and eliminating carbon dioxide With organic arterial occlusion the skin is usually dry and atrophic Reid²⁶ has emphasized the need of proper care in cleansing and greasing the skin Keeping the skin soft and pliable probably aids the cutaneous surface in absorbing oxygen from the air and eliminating carbon dioxide into the air With this in mind the care of the skin should be an important part of the routine care of the extremities in peripheral circulatory disease

Although the results of the total metabolism tests indicate some increase in oxygen consumption following our routine form of treatment, they are used only as possible corroborative evidence for our other observations The factors of error in determining metabolic rates are too great to permit accepting these metabolic readings alone as conclusive evidence of increased oxygen consumption following treatments with alternating positive and negative pressure

CONCLUSIONS

Correlating the results of gas analyses for the oxygen-carbon dioxide content in the venous blood of the extremities before and after positive and negative pressure treatments with the elevations in skin temperatures has provided a physiologic basis for treating peripheral circulatory diseases with alternating changes in environmental pressures

Alternating positive and negative pressure treatments primarily effect the oxygen-carbon dioxide exchange in the tissues This oxidation process may account for the increased skin temperatures There is little evidence that circulation is increased, especially in the presence of organic occlusive disease

Vasodilatation as a result of direct heat or reflex heat is more effective in increasing peripheral circulation but apparently has little effect in augmenting oxygen-carbon dioxide exchange in the tissues The increased circulation merely increases the adequate oxygen supply that is still available

Combining reflex vasodilatation with pressure treatments, our routine procedure is of distinctly more

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24 Rowntree L G Adson A W and Hench P S Preliminary Results of Resection of Sympathetic Ganglia and Trunks in Seventeen Cases of Chronic Infectious Arthritis *Ann Int Med* 4: 447-454 (Nov.) 1930

25 Scott W J M and Morton J J The Differentiation of Peripheral Arterial Spasm and Occlusion in Ambulatory Patients *J A M A* 97: 1212-1215 (Oct. 24) 1931

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clinical value than either measure alone. The reflex vasodilatation produces maximum increase in circulation and the pressure treatments augment local tissue metabolism. The resulting greater utilization of increased oxygen supply seems to be the basis for the superiority of this form of combined treatment.

The permanence of the improved circulation and local tissue metabolism cannot be determined because of the natural progress of most peripheral circulatory diseases. It is advisable to keep the improvement in circulation in advance of the disease process.

55 East Washington Street

THE MASSIVE BONE GRAFT IN UNUNITED FRACTURES

MELVIN S. HENDERSON, M.D.

ROCHESTER, MINN.

The problem of the ununited fracture is one that I brought before the Section on Orthopedic Surgery in 1921, reporting 247 ununited fractures, and again in 1923, discussing the treatment of 220 patients who had fractures in a fixed state of nonunion, both of these series of cases were encountered at the Mayo Clinic. Basing this paper on material encountered in the same institution, I venture to discuss again the treatment of ununited fractures and am reporting the results in treatment of 336 traced patients of a total of 374 who have been operated on since my last report. My reason for this presentation is that at the clinic with increased experience we have evolved a comparatively simple technic that gives a higher percentage of good results than we have heretofore obtained. Experience has taught us that the larger the graft, the better the chances of success. We have termed this type of graft the "massive graft." Campbell uses the same type of graft and calls it the "onlay graft." It might well be designated as the "massive, onlay autogenous graft." Some of our patients had more than one ununited fracture, thus the 374 patients had a total of 413 ununited fractures. There were 288 males and eighty-six females, whose average age was 33½ years.

The order of frequency with which the various bones were sites of ununited fractures was as follows:

1. The tibia was involved in 132 instances and the site of fracture was the upper third in twelve, the middle third in sixty-five and the lower third in fifty-five.
2. The radius was involved in seventy-nine instances, the fracture was in the upper third in three, the middle third in thirty-two and in the lower third in forty-four.
3. The involved bone was the humerus in seventy-four instances, the site of fracture was the upper third in nine, the middle third in thirty-three and the lower third in thirty-two.
4. The femur was involved in sixty-eight instances and the site of fracture was the neck in thirty-seven, the upper third in seven, the middle third in sixteen, and the lower third in eight.
5. Fifty of the ununited fractures affected the ulna, the site of fracture was the upper third in thirteen instances, the middle third in twenty-four and the lower third in thirteen. The ununited fractures were of other bones in ten instances.

Two hundred and fifty-four of the total number of patients had initially simple fractures and 120 had

compound fractures, but 215 of the patients had fractures associated with severe contusing, twisting or crushing types of accidents, which emphasizes the fact that a large percentage of ununited fractures are associated with severe injury. Two hundred and four patients of the total number of 374 had been operated on previous to their visits to the clinic, some three or four times or more, and in operations on 100 of the patients some form of metal, such as plates, bands or wires, had been used for internal fixation. Fifty-five patients had been submitted to autogenous bone grafting operations elsewhere but roentgenograms disclosed that in the majority of these cases the graft had been very small and did not approach fulfillment of the massive graft. A considerable number of these grafts had been inserted in the presence of a draining sinus.

As has been stated, in some cases we treated more than one ununited fracture by transplantation of bone and in a few cases we inserted second bone grafts because of failure of the first. Among the 336 traced patients, 367 fractures were subjected to bone grafting operations. Calculating the results on the basis of traced patients, there were fifty-two failures and 284 successful results, or 84.5 per cent of the patients obtained bony union. Calculated on a basis of the number of fractures treated, the percentage of success is practically the same, the fractures of both bones of the forearms were those which chiefly increased the number of operations over the number of patients. The results in the traced cases, according to the bones fractured, were as follows: tibia, 118 with ninety-six bony unions, or 81 per cent; the radius alone, forty-six with forty-one bony unions, or 89 per cent; the humerus, sixty-three with fifty-five bony unions, or 87 per cent; the femoral neck (intracapsular), thirty-three with twenty-five bony unions, or 76 per cent; the femoral shaft, twenty-five with twenty bony unions, or 80 per cent; the radius and ulna together, twenty-three with twenty bony unions, or 87 per cent; and the ulna alone, seventeen with fourteen bony unions, or 82 per cent. Obviously the twenty-three instances in which the radius and ulna both were sites of ununited fracture must be thought of as representing twice twenty-three bones if all bones fractured are to be counted in the total.

TYPES OF BONE GRAFT

The intramedullary graft must be mentioned but not for approval. It is still used occasionally, particularly for fractures of the shaft of the femur that are delayed in uniting, but it is not suitable for the typical case of nonunion. It is a foreign body in the medullary canal, has no physiologic action and provides only fair fixation.

The osteoperiosteal graft is perhaps best suited for use in treatment of children. Osteoperiosteal grafts give no support and we have not been satisfied with results from their use.

The inlay method of Albee is characterized by precision and accuracy in fitting the bone graft (fig. 1a). Its most useful field is in treatment of fractures of the tibia where exposure is easy, but in dealing with small bones such as the radius and ulna and with the deeply placed femur only a few surgeons are capable of the meticulous technic necessary.

The massive graft which is applied and firmly held to a broad well prepared area on each fragment has been in our hands, the most successful (fig. 1b).

One distinctive advantage of the inlay and the massive onlay graft is that they provide good fixation

However, because considerable absorption takes place before any bone graft is vascularized and revitalized, a period of weakness develops. Therefore adequate external fixation, preferably by plaster casts, must be provided until union has become complete. Disregard of this leads to undue strain on the graft and in the period of weakness it will generally fracture.

The larger the graft the more strength it has in this period of weakness, during which revitalization takes place. Thus experience has taught that, other things being equal, the larger the graft, the better the chance for success. It is because of this fact that I wish to stress the term "massive" and to urge that it be retained in speaking of this type of bone graft, thus emphasizing the fact that bone grafts should be as large as possible.

A discussion of the physiology of repair of bone is not within the scope of this paper. The part played by the periosteum has been written about extensively and, although the periosteum should be retained if possible, clinically we have never been convinced that it was of any great importance. It is well to take the bone graft from as near the epiphyseal region as possible, for it is in that area that the bone cells are the most active physiologically and, as I shall later stress in discussing the technic, the small pieces of spongy bone obtainable close to the epiphyseal line are very important, a fact not generally appreciated.

SELECTION OF CASES

One of the outstanding causes of failure is post-operative infection. The percentage of cases in which infection follows operation, if infection is not previously present and if the field of operation is free of scar tissue, is no higher than in other types of surgery. A good number of the total number of patients, 204, as has been said, had been operated on before coming to the clinic and they had varying degrees of scar tissue. In eighty-one of the traced cases infection had taken place, either at the time of accident or at the operation performed before the patients came under our care and, although healing had taken place by the time of our operation, in twenty-two cases, or 27 per cent of cases in which infection once had been present, infection developed after our operation. Of 255 cases in which infection had not taken place, either at the time of accident or at previous operations, in thirty, or 11 per cent, infection developed. This percentage of infection may be higher than that encountered in the usual run of clean surgical cases, but it must be remembered that many of these patients had extensive scarring, both in the skin and in the deeper structures, attributable either to the injury or to previous operations. It was necessary to expose the fragments through this nonvascular scar tissue and the trauma necessarily incident to the operation produced a field that easily became infected. Even if frank infection does not develop after operation, scar tissue of the fascial planes or of the skin may undergo necrosis and, as these tissues break down, the semiliquid, degenerating mass occasionally becomes infected from the blood stream. We have had no deaths from infection nor have we been forced to amputate for infection in any of this series of cases. There was only one death and that was attributable to a cerebral embolus finding its way through a patent foramen ovale in the heart of a woman who had been subjected to a bone grafting operation for ununited fracture of the neck of the femur. Death occurred on the fourth day after operation.

Sinuses must be healed and all redness and swelling must have disappeared for many months before repair of an ununited fracture is attempted. We have come to insist on at least six months having elapsed between the disappearance of these signs and the time selected for operation. Infection occurring in a wound after transplantation of bone usually means failure.

MASSIVE GRAFT

Our percentage of successful bone grafts has increased, I believe because we have become more judicious than we formerly were in selection of the time to operate, because we use the massive graft and because we have improved the actual technic of placing the graft.

The patient's general health, of course, should be investigated, but patients who have ununited fractures, taken as a group, are of the healthy, robust type. The cause of failure of a fracture to unite is a local one in most cases, but in this paper I cannot discuss this

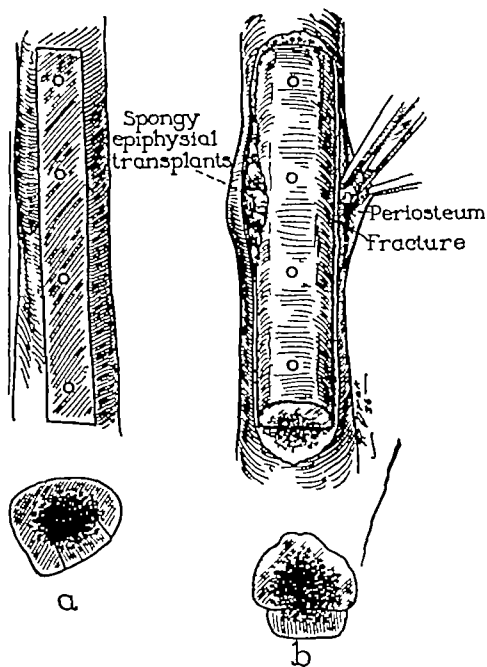


Fig 1—*a* inlay graft held by beef bone screws *b* massive graft held by beef bone screws. Note greater amount of bone also multiple spongy bone transplants at line of fracture.

interesting phase of the subject. Syphilis, in our experience, has not been a factor. If the patient had syphilis we treated for this disease until the blood was negative and then proceeded with our surgical work.

PREPARATION OF FRACTURE SITE

The extremity should be shaved if necessary and any of the recognized ways of rendering the skin sterile may be used. A tourniquet should be used unless its use is contraindicated for some reason.

TECHNIC

The incision should be adequate to allow exposure of the fracture and sufficient of the fragments so that the massive graft can be applied. The skin should be draped carefully with towels.

Dissection down to the bone should be carried out with the least possible trauma and without unnecessary stripping back of the periosteum and tissues surrounding the bone. This is extremely important if the fracture has been compound or if previous operations

have been performed, for rough handling of scar tissue may lead to gangrene and slough. The ends of bone should be exposed, the fibrous tissue removed from between them, the rounded ends reshaped, the medullary cavities opened and the ends of the bones fitted together, even at the expense of shortening. Shortening of a leg by 1 inch (2.5 cm) can be easily compensated for.

The cortices of the fragments where the graft is to be applied should be freshened by aid of the chisel. We have come to believe that the use of a sharp chisel is preferable to the saw for the slightly irregular surface produced by the chisel is more conducive to a take of the graft than is the smooth ground surface left by the circular saw. The outer layer of the cortex should

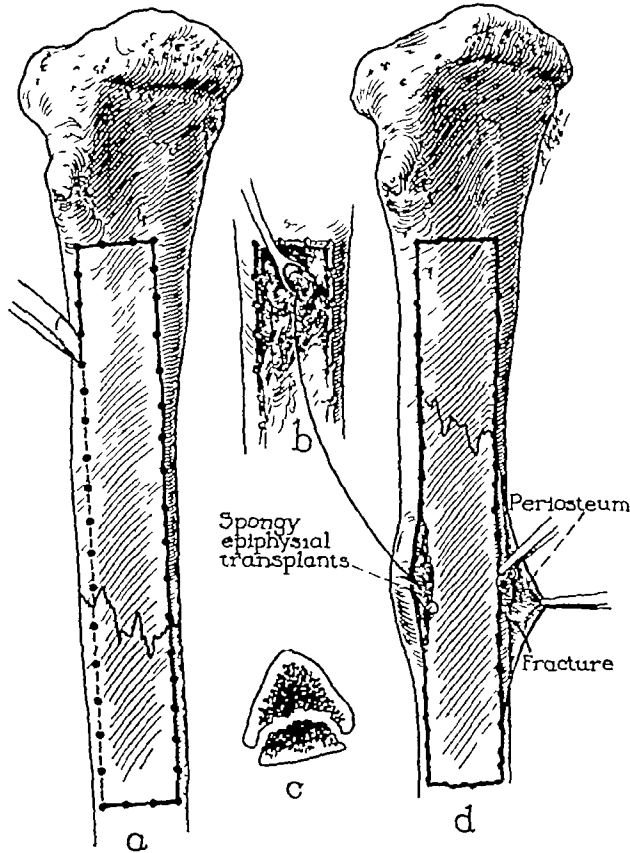


Fig. 2—*a* removal of massive reversible graft for ununited fracture of tibia by aid of chisel and drill holes. *b* removal of spongy epiphyseal transplants from upper end of bone. *c* cross section showing large graft obtainable from tibia and *d* reversible massive graft in position with multiple spongy graft about site of fracture.

be chiseled away until the deeper, vascular tissue bleeds. This preparation should extend well beyond the line of fracture into the healthy bone of each fragment, the distance varying with the bone involved. For the humerus the graft should be at least 10 cm long and slightly longer for the femur. While bone for the graft is being obtained the wound should be filled with a saline pack and the skin drawn snugly together with skin clips to control oozing, for the tourniquet should be removed at this stage.

Removal of Bone Graft—If a second surgical team is available to remove bone for the graft, the time will be materially shortened. The graft should be removed from the flat internal surface of the tibia as near the upper epiphyseal region as possible. The graft can be taken out with a motor saw or by drilling multiple holes and then chiseling between them (fig. 2 *a*). In

operating on an adult it is possible, with a good sized curet, to remove spongy bone contiguous to the upper epiphyseal line (fig. 2 *b*). These scrapings are of the greatest aid and should be kept warm and moist in a saline pack. The rough medullary portion of the bone graft is removed with bone biters until the deep cortical layer is reached. This material is saved, along with the other scrapings of spongy bone. The wound in the leg should be closed immediately and bandaged.

Application of Massive Graft—The wound at the site of fracture is opened, the fragments are held firmly together, and the flattened, medullary side of the bone graft is placed against the prepared areas on the cortices and held firmly in this position with bone holders. A drill is then put through the bone graft, through the proximal cortex, across the medullary cavity and through the opposite cortex. Then a tap of the same size is put in to steady the bone graft, and this process is repeated so that the four taps are left protruding in each fragment. This steadies the fragments and the bone graft, and the surgeon can then tell whether the position is satisfactory. If it is, one tap is removed and a beef bone screw of corresponding size is inserted. This is repeated for each drill hole, securely holding the fragments in position. The large tops of the screws are bitten off with a bone biter.

The next step is almost as important as the use of the graft. The bone graft steadies the fragments, it is true, but the scrapings that are saved to be packed around the site of fracture and along the margins of contact of the bone graft with the fragments, near the line of fracture, furnish great physiologic stimulation and help in causing the fragments and graft to unite rapidly. This insures a large amount of spongy bone near the fractured ends, which are sluggish physiologically and need this stimulation. The wound is then closed and a plaster-of-paris cast is applied, to be worn until union is complete. If there is considerable oozing and soiling of the cast, it can be removed at the end of three or four weeks and a new one applied.

SUMMARY

A review of the records of 374 patients who had ununited fractures discloses that 413 fractures were treated. Some patients had more than one ununited fracture, for example, both radius and ulna.

Three hundred and thirty-six patients were observed long enough for us to be certain as to the result. Two hundred and eighty-four, or 84.5 per cent, obtained bony union. Among the traced patients were 367 fractures which were subjected to bone grafting, and the results when calculated according to the number of operations was practically the same as when reckoned according to the number of patients.

The "massive" graft the same type as that which Campbell calls the "onlay graft," is our choice. The secure fixation with accurate fit and the packing about the site of fracture of scrapings of spongy bone obtained from near the epiphyseal line are necessary steps in the operation.

ABSTRACT OF DISCUSSION

DR. OSCAR L. MILLER, Charlotte, N. C. Massive bone transplants or implants are primarily indicated for bridging defects in long bone or for mobilization of joints. Defects in bone may be seen as extensive shaft bone substance or neglect from nonunion at some point along the shaft. While the massive bone graft operation is carried out for the purpose of stimu-

1 We use either a standard #32 or 10/32 Standard American Machine screw tap according to the size of the drill used.

lating new bone growth, such a graft should generally be so implanted as to act at the same time as an internal fixation splint to the affected parts. In spite of how secure, though, the internal fixation of the implant may appear to be, further external fixation measures are indicated. The best types of bone graft appear to be the massive onlay grafts in the hands of surgeons equipped to make up the autogenous elements necessary, and the wedge-in implant. My experience has been largely with the latter, where long bone defects have been encountered. When using the wedge-in bone grafts, one may carry to the defect quite a lot of medullary bone along with the cortical mass, and also give positive pressure between the defective bony ends. There appear to be indications for two main types of massive grafts, the onlay and the wedge-in, and both should be transplanted with a view to bone regeneration and, at least temporarily, internal splinting for fixation. I have had some experience with failure in using massive bone grafts to bridge defects of the tibia, particularly when repeated operations have been carried out through the tissues of the shin. Twice I have been able to succeed with such a graft by exposing the posterior surface of the tibia and transplanting to that aspect of the bone where both the soft and bone tissues had not been traumatized.

DR. FREMONT A. CHANDLER, Chicago. The large series of cases that Dr. Henderson has had is remarkable, when one thinks of the traumatic surgery that has been done in these cases and that more than 200 of the patients had been operated on from one to seven or eight times before he received them for treatment. It shows the failure of much of our bone surgery. When placed in proper hands, the results may be satisfactory after so many failures. It is interesting also to note the high percentage of nonunions associated with foreign material fixation, especially the metals, plates and wires. In view of the extensive surgery done previously in these cases, with the scar tissue harboring potential infection his percentage of 24 per cent infections seems low. One point that has not been touched on is the function of the bone graft. The function of bone is the withstanding of pressure. A bone transplanted into soft muscular tissue will absorb, whereas bone subjected to some end pressure will survive. So, in placing a bone graft, I like to have some end strain, but, as Dr. Henderson has mentioned, I try to avoid the torsion and cross strains that would result in fracture. Another point in his paper that was illuminating is the high percentage of nonunions in the upper third of the tibia rather than in the ordinarily more popular area of the lower third. I think the general conception is that the nonunions are more frequent in the lower third. His paper emphasizes the upper third rather than the lower third. This presentation also completes the symposium on fractures of the neck of the femur, and I see that a large number of the nonunions that were being worried about two days ago may be solidified by massive bone grafts.

DR. W. K. WEST, Oklahoma City. My experience in the use of massive autogenous bone grafts has been limited to the modified Campbell technic which is slightly different from the method described by Dr. Henderson. The principal difference is that the onlay graft is held in position by autogenous bone pegs. Anatomically, the most difficult area for successful bone grafts is the upper humerus and upper radius. Onlay grafts are best suited to the humerus, ulna and radius. In the tibia I prefer the inlay and in the femur the intramedullary autogenous bone peg. Where metal fixation has been previously attempted, such as the use of Lane plates, Parham bands or wire, it is better to remove the foreign bodies as a preliminary operation to the massive bone grafting. Great care is necessary in obtaining mechanical efficiency in cases in which there is marked bone atrophy. In those cases of fracture of the upper humerus it is best to drive the upper end of the graft into the cancellous portion of the head, as it is impossible to obtain fixation in atrophic cancellous bone. This operation calls for two teams experienced in bone surgery. Old compound fractures must not be operated on sooner than one year after the cessation of drainage. Adequate external fixation is most essential and should be maintained for many weeks until such a time as the roentgenogram shows adequate bony union.

DR. MELVIN S. HENDERSON, Rochester, Minn. I didn't show lantern slides of cases that I had operated on for the reason that I wanted to confine the discussion to the essential fundamentals of technic. I would like to emphasize again that the

bone grafts should be large and that the fragments should be well prepared and freshened for the reception of the bone graft. The graft should be smoothed down on the medullary surface so that the deep layer of cancellous bone is exposed, and it should fit snugly to the fragments. The grafts should then be held firmly in place either by beef-bone screws or by autogenous pegs, if the fragments are very osteoporotic. Parham bands may be used. Firm fixation must be obtained. Around the fracture line and along the edges of contact of the graft to the fragments little pieces of spongy bone, secured from near the epiphyseal line, should be carefully packed. These small grafts are very important and the results have been more uniformly good since they have been used. In this mechanical age I think that a motorized circular saw is necessary to secure a bone graft. In one of the illustrations I showed a method of outlining the graft with multiple drill holes, a chisel being used to separate the graft between the drill holes. It can be done very readily if a thin bladed chisel is used and if care in chiseling is exercised. The transplant so removed is rough on the edges, which is really preferable to the more smooth even almost polished surface that follows the use of the circular saw, for it permits more readily revascularization of the transplant.

SIGNIFICANCE OF AN EPIDEMIC OF DENGUE

T. H. D. GRIFFITTS, M.D., DR. P.H.
Surgeon, United States Public Health Service
AND
HENRY HANSON, M.D.
JACKSONVILLE, FLA.

Dengue, "breakbone fever" or "dandy fever" is an acute, febrile disease due to a filtrable virus which is constant in the peripheral circulation during the febrile stage. The disease is endemic in many tropical countries, and many explosive epidemics have occurred in subtropical and temperate climates.

Dengue is transmitted naturally by only one species of mosquitoes, *Aedes aegypti*, in the United States (so far as now known), while in the Philippines, in addition to *Aedes aegypti*, another species of *Aedes*, *albopictus*, has been shown to be infectable. Ashburn and Craig¹ demonstrated in 1907 that a virus in the circulating blood was the causative agent, although they apparently were in error in ascribing transmission of the disease to *Culex quinquefasciatus*, as was later proved by the studies made by Cleland, Bradley and McDonald² in 1916, Chandler and Rice in 1923 and Siler, Hall and Hitchens³ in 1925. Simmons, St. John and Reynolds,⁴ working in the Philippines, found that for an interval of at least nine days after feeding on a dengue patient, *Aedes aegypti* was not capable of transmitting the disease (extrinsic incubation period) but was infective after about twelve days following the ingestion of the blood from the patient. Once infective, *Aedes aegypti* remains so the remainder of its life, provided the atmospheric temperature continues favorable. It has been demonstrated by Blanc and Cominopetras that with atmospheric temperature below 18 C (64.4 F) the virus in mosquitoes becomes non-infective. This accounts in a large part, perhaps, for the cessation of violent epidemics on the approach of

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¹ Ashburn P. M., and Craig C. F. Philippine J. Sc. sec. B 2 93 1907. Craig C. F. The Etiology of Dengue Fever J. A. M. A 75 1171 (Oct. 30) 1920.

² Cleland J. B., Bradley Burton and McDonald W. M. J. Australia 2 179 (Sept. 2) 200 (Sept. 9) 1916.

³ Siler J. F., Hall M. W. and Hitchens A. P. Proc. Soc. Exper. Biol. & Med. 23 197 1925.

⁴ Simmons St. John and Reynolds. Experimental Studies of Dengue, Bureau of Sc. Manila Bureau of Printing 1931.

winter. However, *Aedes aegypti* is essentially a day biter, and preferring to remain indoors, as this house mosquito does, outdoor temperature is not a fair indicator of its ability to continue to administer infecting bites.

We have mentioned the fact that, in order to become infected, *Aedes aegypti* must secure blood from the dengue patient during the first forty-eight hours of the initial fever and that there is an extrinsic incubation period (in the mosquito) of about twelve days, then there is an intrinsic incubation period (in man) of from four to ten days. In all these characteristics and in the principal mosquito vector, namely, *Aedes aegypti*, the epidemiology is essentially identical with that of yellow fever, although unlike yellow fever in that ordinary laboratory animals have not yet been proved susceptible to dengue virus infection.

As to immunity, all endeavors at the establishment of cross immunity between yellow fever and dengue have proved negative. The immunity produced by an attack of yellow fever is practically absolute, while an attack of dengue produces a very definite immunity lasting only for a few years. It may be assumed that in a period of from five to ten years' freedom from dengue a given urban population in infectable territory is again susceptible to this disease. To illustrate, in the epidemic of dengue at Galveston, Texas, in 1917 it was estimated that 50 per cent of the population suffered attacks. Only five years later (1922) another epidemic occurred in which it was estimated that 60 per cent of the city's inhabitants were attacked.

The first recorded epidemics of dengue occurred at Cairo, Egypt, and Batavia, Java, in 1779, and in Philadelphia in 1780 (described by Benjamin Rush in 1818). Since that time this disease has ever brought to mind its striking similarity to yellow fever. Long before the transmitting agent of yellow fever (the mosquito *Aedes aegypti*) was definitely known, physicians in various parts of tropical and temperate zones observed and recorded facts concerning the parallel epidemiology of the two diseases. Strangely enough, Linnaeus eighteen years before the recorded epidemic in Cairo had found in Egypt also and described the mosquito that is now known as *Aedes aegypti* and which is a vector—at least the most important vector—of both yellow fever and dengue. Epidemics have occurred at more or less lengthy intervals in various areas between parallels 32° 47' N and 23° 23' S, and even beyond these lines at times. In other words, during favorable seasons of warm and wet summer months with resulting heavy production of *Aedes aegypti*, plus the introduction of a first case or the importation of infected *Aedes aegypti*, limited epidemics have occurred in areas beyond its ordinary boundaries, e. g., Philadelphia, Constantinople, Athens and other points in Greece.

The rapidity with which dengue spreads in non-immune populations is probably exceeded only by influenza. The fact that in most epidemics of dengue there is a relatively large percentage of cases of mild type, many unrecognized, or not officially reported, lays the foundation for widespread mosquito infection. In any given epidemic, ambulatory patients are not only more exposed to bites of mosquitoes in daytime than the bedridden patients but in travel, although restricted, chance to infect mosquitoes over a wider area is increased. This is responsible then, for the greater rapidity of the spread of dengue than in the case of yellow fever. On the other hand the dreaded mortality from yellow fever incites greater activity in

preventive measures, such as prompt and accurate reporting of cases, greater care in protecting not only the sick but the well from mosquito bites, the employment and training of medical and sanitary personnel, and the expenditure of funds for epidemiologic investigations and vector control.

One frequently hears, even today, that dengue is only a painful disease of short duration, the patient "sick enough to die but doesn't." This is misleading. While recovery occurs in uncomplicated cases of dengue, the same may be said of many other diseases.

According to records, the city of Athens, Greece, had approximately 239,000 cases of dengue up to September 4, in the 1928 epidemic. This represented 75 per cent of the population of the city. The registered deaths from all causes in Athens for the month of August 1928 totaled 1,268, of which 413, or 32.6 per cent, "were certified as due to dengue." In Piræus, a city of 136,000 during the same month the registered deaths from all causes numbered 592, of which 176, or 29.7 per cent, "were caused by dengue."

In the average epidemic of yellow fever, about 10 per cent of the cases are fatal, the same as from typhoid. But in the days when diagnoses of yellow fever were made only when the patient had "black vomit" and died, it is no wonder yellow fever mortality seemed so appalling. As time goes on and research progresses, more and more is being learned about the epidemiology and the endemic characteristics of yellow fever and dengue. Through immunity tests for yellow fever in recent years developed by Sawyer and others, it is now known that yellow fever in its present endemic areas is not a deadly disease at this time but that the area of endemic prevalence is more widespread than was formerly considered.

The last pandemic of dengue in the Southern states occurred in 1922. The first cases were reported from Tampa, Fla. A relatively light prevalence in many communities was reported the following year, and in this country no epidemic followed for eleven years, when in 1934 dengue was reported (July 16) in Miami, Fla. The origin of the first case of dengue in the Miami epidemic is not known. It is assumed, of course, that either an infected person or an infective *Aedes aegypti* mosquito came into Miami by boat or by airplane from some endemic tropical center. Formerly dengue and yellow fever gained entrance to the United States by means of traffic across the Mexican border or by sailing vessel or steamship to Atlantic or Gulf ports. Today, with rapid airplane traffic between Cuba, the West Indies, South America, Central America and Mexico, an added danger exists. Yellow fever is now present on the Western hemisphere only in parts of Brazil, Colombia and Bolivia, so far as known, and, too, only in certain jungle areas.

The United States Public Health Service in 1931-1932 demonstrated the facility with which *Aedes aegypti* may be carried long distances in aircraft.⁵ Until this apparent menace was demonstrated and the newer knowledge concerning the extent of endemic yellow fever, particularly in Africa, with so-called jungle fever in Brazil, Bolivia and Colombia, with at least a dozen additional species of mosquitoes now known to be infectable with yellow fever virus and some species of monkeys readily susceptible, health officials the world over were hopeful of ultimate eradi-

⁵ Griffiths, T. H. D. and Griffiths, J. J. Mosquitoes Transported by Airplanes. *Pub. Health Rep.* 46: 2775 (Nov. 20) 1931. (Cited by T. H. D. Air Traffic in Relation to Public Health. *Am. J. Trop. Med.* 13: 283 (May) 1933.)

cation of yellow fever. Today there is a feeling of concern lest our own infectable areas may again be invaded, and that Old World territory, where the vectors abound and where yellow fever has never before stalked, may experience widespread and devastating epidemics.⁶ One infective mosquito traveling in an airplane from the home of yellow fever (Africa) to India could be the spark to start the conflagration.

The facility with which dengue spread in Miami in the summer of 1934⁷ and thence into practically all parts of Florida and into parts of Georgia shows with what rapidity and certainty yellow fever, too, can still spread in our own country. Yellow fever was rather promptly brought under control by the application of anti-aegypti methods in our latest epidemic (1905), but it is erroneous to consider that this disease has been kept out by mosquito eradication in our Southern ports. Immunity against yellow fever in the Southern states or infectable territory today may be considered nil so far as danger of epidemic spread is concerned. It is doubtful whether 0.1 per cent of the population of infectable territory is protected by a previous attack of yellow fever. Consequently, we are still vulnerable to its devastation if once reintroduced.

When we were faced with the prevalence of dengue in Miami in July 1934 and the responsibility of preventing its spread, surveys in various cities, towns and villages reminded us of what we already knew—that in spite of our civic pride and detestation of mosquito bites there is still a complacency sufficient to tolerate an abundant production of *Aedes aegypti* throughout the habitat of this vector. In a period of two months dengue was reported in seventy municipalities in thirty-one counties in Florida and a few places (principally Savannah) in Georgia.

Practically every urban community in the South has its array of artificial containers, from flower vases to catch basins, cuspidors and discarded automobile tires, producing *Aedes aegypti*. For example, the city of Tampa in eight weeks reported finding 1,091,823 containers (potential mosquito "hatcheries"). Of these, larvae were found in 20,864, or approximately 2 per cent. This was an unusually dry season (average rainfall of 1½ inches a month for this period). It is interesting to note that in Miami for a like period only 56,598 potential breeding containers were reported, with 38,401, or 68 per cent, of the total actually breeding.

While we long assumed that only one mosquito (*Aedes aegypti*) transmitted yellow fever and dengue, it is now known that more than a dozen species in Africa and Brazil are susceptible to infection with yellow fever virus and that at least two species of *Aedes* (*aegypti* and *albopictus*) have been proved infectable with dengue in the Philippines (*Albopictus* has also been infected with yellow fever virus). It is worthy of note, at least, that the greater percentage of cases of dengue in the Florida epidemic occurred in coastal areas and that *Aedes taeniorhynchus* (the great salt marsh pest of Florida) has been proved susceptible to yellow fever virus in Brazil.

The senior author of this paper, in the course of malaria investigations over a period of more than twenty years, has had occasion to observe *Aedes aegypti* conditions in various parts of infectable territory. He

states without reservation that *Aedes aegypti* production is not now under control and never has been brought under reasonable control, except under stress of imminent danger of an epidemic of dengue or yellow fever. Only two factors have been concerned in our freedom from yellow fever during the past thirty-one years: (a) the constant vigilance in our national quarantine service and (b) the practical freedom from epidemics in Latin American countries to the south of us. How long the latter condition may prevail is mere conjecture.

ABSTRACT OF DISCUSSION

DR. V. H. BASSETT, Savannah, Ga. The authors have presented a message of great importance to Southern cities and especially to those on the Atlantic and Gulf coasts, because they have shown what we have long suspected, namely, that the fact that we have not had yellow fever was not due to our having conquered the insect vector but to the fact that neither the infected insect nor an infected human host has come into our territory as a source of virus. With the increased rapidity of transportation, especially by airplane, the danger of this is evident. The reason *Aedes aegypti* has not been controlled more carefully is largely due to the fact that it is not as annoying a mosquito as the other city mosquitoes. Another reason is that the adaptation of *Aedes aegypti* to man has been most exquisite in the delicacy of enabling it to breed in extremely small amounts of water and in the most unexpected places. No control that is not in itself searching will suffice. There have been epidemics in Savannah since early times: in 1913, when 20,000 people were sick in a population of about 70,000 people, in 1922, when 30,000 were involved in a population of about 85,000, and in 1934 when strenuous efforts were made for prevention after we found out what was going on in Florida and had fully 10,000 sick. The question of whether or not *Aedes aegypti* may not be altering its habitat and becoming more adapted to rural conditions is important. The question of the percentage of residences in which breeding was going on is important as a factor in determining the spreading of the disease. We made a test when the last epidemic began and found that breeding existed in 20 per cent of the yards. The most strenuous efforts were made to control this, and we were able to reduce that to only slightly below 10 per cent. I think we would have reduced the percentage more decidedly if I had been able to control breeding in roof gutters, not on open roofs, because mosquitoes will not breed there unless there is a great deal of shade. They breed in very little water, under leaves. It is considered that reduction of the breeding index of mosquitoes is effective if reduced below 5 per cent. There is a chance that one house where breeding exists infests four or five houses in the immediate neighborhood. I was sorry to hear what the authors had to say about *Aedes taeniorhynchus*, because if that mosquito proves to be a vector it is going to make it much more difficult for the cities located as is Savannah, near salt marshes, to prevent these epidemics. Fortunately, *Aedes sollicitans* is the more common marsh mosquito on our part of the coast and we do not find *Aedes taeniorhynchus* so often.

DR. T. H. D. GRIFFITTS, Savannah, Ga. We seem to have aroused considerable interest by mentioning *Aedes taeniorhynchus*. This mosquito has been proved susceptible to yellow fever virus. Nobody at present knows whether this species plays any part in the spread of dengue. I mention that because of the fact that the original yellow fever mosquito is also the outstanding violator in the matter of dengue. One should not overlook the possible significance of the frequently greater prevalence of dengue in coastal towns. The fact must be lost sight of that in case yellow fever should break out it might not be limited to one section of a city, as was often the case in former epidemics. Yellow fever used to be largely confined to the French quarter in New Orleans. With automobile transportation it is not unusual for an *Aedes aegypti* mosquito to get into a car parked by the side of the house overnight and be carried rapidly 5, 10 or 15 miles, even with the windows and windshield open, as I have demonstrated. So, while we have reduced certain reproduction areas or places by doing

⁶ Sinton. Suggestions with Regard to Prevention of Spread of Yellow Fever to India by Air Traffic. Health Bull. 20. Malaria Survey of India. Kasauli. India. Delhi, India, 1934.

⁷ Griffiths, T. H. D. Dengue in Florida 1934. J. Florida M. A. 21: 395-397 (March) 1935.

away with above-ground cisterns, a prolific source of *Aedes aegypti* in former days methods of rapid transportation will cause rapid spread of either yellow fever or dengue in modern times, such as did not exist in the "horse and buggy days." I think that is true also in spreading *Aedes aegypti* to the smaller communities and even to farmhouses where they are occasionally found today, whereas this mosquito once was regarded as a city dweller.

HERNIOPLASTY IN PATIENTS PREVIOUSLY TREATED BY THE INJECTION METHOD

PRELIMINARY REPORT

GEORGE GORDON, M.D.

AND

ELIAS GORDON, M.D.

NEW YORK

The late Dr. J. Chalmers Da Costa,¹ referring to the work of Lannelongue, said

Lannelongue has for certain cases returned to the old injection plan, using a ten per cent solution of zinc chloride. The hernia is first reduced and is held up by an assistant who closes the internal ring with a finger and also holds the cord aside. Several injections of ten minims each are thrown into the region of the internal pillar and into the canal behind and outside of the cord. The surgeon must be careful that no zinc solution escapes into the subcutaneous tissue. The effect of the chloride of zinc is to cause the formation of quantities of fibrous tissue. It is scarcely to be expected that a cure so produced will be permanent in an adult, though it may be in a child.

As far as we know, Dr. Da Costa had never practiced the injection method, yet the foregoing statement revealed hope rather than doubt, curiosity rather than arrogance.

The rationale of the injection method, though perfectly reasonable and simple, was long rejected by the medical profession as unheard of insolence. When finally revived in recent years it had merited the following remarks in the *British Medical Annual* for 1931: "When we remember the scepticism with which the injection treatment of varicose veins was first received by the profession it would be unwise to refuse the slightest credence to these observations."

The injection method has its limitations. The fact that some authors consider it to be the method of choice in all reducible hernias of moderate size has prompted this preliminary report. The observations here presented indicate that sliding hernia is a direct contraindication to the injection treatment and that any attempts at the ambulant treatment of this condition may be fraught with disappointment and perhaps danger. Moreover the diagnosis of sliding hernia before operation is seldom possible and when it is ventured it is done so with a degree of uncertainty. Once the treatment of an undiagnosed sliding hernia has been initiated, the outcome will depend on the surgical judgment of the operator. If he possesses a fair amount of it together with the profits of personal experience, he will know when and why to stop injecting.

REPORT OF CASES

Five patients in our private practice had submitted to the operative repair of sliding hernia after a variable number of injections in the usual manner and spaced at biweekly intervals. The number of injections varied

from sixteen to thirty. The average lapse of time between the last injection and the operation was ten months. The patients were all men well over 40.

It was noted during the treatment that the canal was eventually obliterated and that the external ring was hardly palpable as such. No sooner was the truss removed, however, and the patient stood up erect, than a large hernial mass appeared in the canal, growing larger on straining and disappearing on lying down. During the various follow-up examinations it was found that the mass had regained a certain degree of mobility, increasing its excursion on coughing or straining. It was also remarked that the patients had a subjective feeling that the hernia was gone, although the swelling appeared in its customary place.

Under low spinal procaine hydrochloride anesthesia an incision was made in the inguinal region. The aponeurosis of the external oblique muscle was divided. An attempt to separate the aponeurotic sheath from the underlying muscle revealed dense fibro-aponeurotic tissue replacing the normal plane of cleavage. The conjoint tendon was next exposed and we observed a vast amount of newly formed cicatricial tissue extending in various directions. The numerous adhesions made it difficult to separate the mass from the posterior aspect of the external ring. The hernial mass was found to be composed of peritoneum forming the anterior wall. Closely adherent to it was a portion of the cecum. This viscus was separated from the sac, peritonealized and reduced. The redundant peritoneum forming the anterior wall of the sac was transfixed with a suture-ligature and cut away. The repair of the muscle wall was performed according to Bassini's method with transplantation of the cord. This patient was a man, aged 42.

Three other cases, originally diagnosed as right inguinal hernias, presented a sliding hernia of the cecum in two, and a portion of the bladder in the third. The fifth case, diagnosed as a left direct inguinal hernia, was found to present a sliding hernia of the sigmoid and omentum.

In order to explain the obvious failure of the injection treatment in these cases, a brief consideration of the subject of sliding hernia is submitted.

ETIOLOGY

1 In the embryonic group, one of the testes prior to its descent has grown to the wall of the cecum either with or without a special fold containing blood vessels. Having descended, the testicle drags the cecum along with it into the inguinal canal. According to Fleissig,² a sliding hernia may be due to the ptosis of the cecum from a congenitally low position. Although the mesentery of the ascending, descending and the portions of the colon normally adhere to the posterior abdominal wall and thus become lost, in some cases these primitive structures may persist. This may result in preternatural mobility of these parts of the large bowel and lead to hernia.

2 Mechanical causes such as constipation, lifting heavy weights and other factors that influence intra-abdominal pressure may be responsible. The continuous filling and distention of the colon may result in the yielding of the layers of the mesentery, these layers separate, leaving the colon under its serous coat to emerge through the inguinal ring.

3 A simple hernia of the small intestine may initiate the condition, and after the sac is distended by the

¹ Dr. Costa, J. C. *Modern Surgery*, ed. 7, Philadelphia, W. B. Saunders Company, 1912, p. 1139.

² Fleissig, quoted by Vergeron, *ibid.*

coils of the small intestine they pull after them the adjoining parietal peritoneum in the neighborhood of the internal inguinal ring. This peritoneum in turn pulls on the portion of the large bowel, which is partly peritonealized.

4 According to Tuffier³ and others, the cecum has two ligaments, the upper and the lower. When the upper ligament is weakened, the ascending colon drops below into the inguinal canal. The cecum either remains in place or follows the large intestine into the hernial sac.

5 Severe malnutrition, senile debility and a weakening of the abdominal wall may favor the development of sliding hernia. At this point it is interesting to note that a so-called relative hernia is a condition also associated with the debilitated state. According to Bickham,⁴ in this condition there is no absolute hernia existing in a sense that a part of the abdominal contents pass through and protrude from an opening in the abdominal wall. But there may be a marked bulging in asymmetrical or symmetrical fashion of a considerable area of the weakened abdominal wall between the umbilicus and the anterior superior iliac spine, caused by the transverse stretching of the aponeurosis of the external oblique sufficiently pronounced to constitute a relative hernia. It is needless to say that in the latter condition the injection treatment is contraindicated.

ANATOMIC CONSIDERATIONS

Only those parts of the large intestine can be involved in a sliding hernia which are not covered on all sides by peritoneum. Properly speaking, this would limit the sliding hernias to the involvement of the ascending or descending colon only. But in a larger sense adjoining loops of bowel and other viscera often participate in a general descent, especially the bladder, appendix and cecum. These organs are drawn down into the sac by the peritoneum investing them.

The posterior parietal peritoneum becomes detached from the underlying structure. It slides into the internal inguinal ring and carries with it the attached loop of large intestine. Next the intra-abdominal pressure forces the intestine into the point of least resistance—the internal ring. The ring now relaxes and the bowel travels down the canal, aided by its own weight.

Sliding hernias are classified as to the variety of sac into three groups:

- 1 Hernia with complete sac (intraperitoneal)
- 2 Hernia with incomplete sac (paraperitoneal)
- 3 Hernia without sac (extraperitoneal)

In the first group the mesentery is long and is found in the sac itself, and the mesentery appears consequently as the continuation of the sac. Complete sacs are generally present in congenital hernias and may contain the cecum, appendix, ascending colon or other viscera.

In the second group the mesentery is short, and the intestinal walls and mesentery are often adherent to the sac. This forms the largest proportion of cases. Here the intestine, which is covered by peritoneum only on its anterior and lateral surfaces, is directed into the sac. When the intestine reaches the sac its posterior nonperitonealized surface adheres to the floor of the inguinal canal or the internal ring.

Sacless hernias are infrequent and by some observers considered as prolapse of intestine through muscle.

DIAGNOSIS

The diagnosis of sliding hernia is usually made in the operating room. The surgeon should always be on his guard for hernia of the large intestine. Certain symptoms, however, may point to the possibility of a sliding hernia before the injection treatment is begun or surgery is employed; suspicion should be aroused in the presence of the following signs:

- In all voluminous hernias
- In all large hernias with a wide inguinal ring
- When the mass is easily reduced in its medial aspect while the posterolateral aspect is reduced with difficulty
- When the patient cannot tolerate a truss
- In the presence of enteroptosis
- In the presence of a doughy consistency on palpation
- On palpating the hernial mass following reduction, one may occasionally distinguish the intestinal wall from the hernial sac
- Occasionally one may succeed in palpating the appendices epiploicae
- If the large intestine is distended with water, the hernial mass is increased and becomes firmer, followed by the disappearance of tympany on percussion
- Roentgen study may point to the possibility

COMMENTS

The reason why sliding hernia does not respond favorably to the injection treatment becomes evident when one studies the mechanism of this condition.

The nonperitonealized posterior portion of the large intestine becomes adherent to the internal ring and the floor of the inguinal canal.

This attachment becomes firmer as the hernia progresses. The apparent reduction of the mass in cases reported was really not true reduction. It resembled a rubber glove with its outer globular surface inverted by manipulation from convex to concave.

The actual lumen of the internal ring was not diminished by the treatment, and the upper portion of the inguinal canal could not be obliterated because of the attachment of the large bowel around the ring and in the canal.

To obtain satisfactory results as in simple hernias of the small intestine it would have been necessary to go through the layer of peritoneum that serves as the anterior wall of the incomplete sac. In this case the solution would have found its way into the peritoneal cavity or into the large bowel. The outcome would be obvious.

SUMMARY

1 In the presence of a sliding hernia and in the so-called relative hernia, the injection treatment is definitely contraindicated.

2 The diagnosis of sliding hernia being often impossible before operation, injections are frequently made with unsatisfactory results.

3 Sliding hernias occur in from 12 to 15 per cent of all hernias. They are usually right sided. They have a considerable tendency toward strangulation. They are often complicated by inflammatory processes within the hernial sac and occasionally by appendicitis. Baumgartner⁵ cites forty-four cases of strangulation out of 159 cases of sliding hernia, or 27.7 per cent. Vengerovski⁶ reports eight cases that were all right sided, involving the cecum and all presenting incom-

³ Tuffier, T. Etude sur le caecum et ses hernies. Arch. gen. med. Paris 20: 52-65, 1887.

⁴ Bickham, W. S. Operative Surgery. Philadelphia: W. B. Saunders Company, 4: 160, 1924.

⁵ Baumgartner, A. Les hernies par glissement du gros intestin. Thèse de Paris, 1905.

⁶ Vengerovski, I. S. Sliding Hernias of the Cecum and Hernial Appendicitis. Soviet Khir. 8: 30-42, 1935.

plete hernial sac Of these eight cases three were strangulated and three were complicated by acute appendicitis within the hernial sac The total number of cases in which injections were done by us was 386, so that in our experience the five reported cases of sliding hernia constituted approximately 1.3 per cent

4 In the presence of a large hernia that resists all attempts at injection and recurs after a reasonable time has elapsed it is our practice to consider the possibility of a sliding hernia and resort to surgery

5 Previous injections and the fibrous tissue proliferation resulting from the injections in no wise interfere with the operative procedure or the operative results

35 East Sixty-Fourth Street

THE PSYCHONEUROTIC DEPRESSION

CHARLES H. KIMBERLY, M.D.

STOCKBRIDGE, MASS

I have chosen the psychoneurotic depression as a subject that deserves more attention than it has been accorded in the current psychiatric literature This discussion, and a recent paper given before the American College of Physicians at Detroit by Dr Austen Fox Riggs and Dr Horace K Richardson, may be considered as forerunners to a general and statistical survey of the problem presented by the psychoneuroses and their treatment at the Austen Riggs Foundation Funds for this have been granted by the Markle Foundation and the study will be carried on by Dr Gaylord Coon and Miss Alice Raymond

Any inspection of the work at Stockbridge indicates that the psychoneuroses, instead of being distinct and separate entities, appear to be variants of the fundamental mental and physical dysfunction caused by the patient's underlying maladaptation to life The variation in the expression of this maladjustment is probably determined by the basic elements in the patient's individuality The stresses and strains in the environment are not causal and are of significance only as secondary and precipitating factors acting on this maladaptation

Any adequate understanding of the neuroses must be based on a knowledge of the physical as well as the mental evolution, development and structure of man The evolutionary significance is largely limited to the fact that more and more of the functions of existence have assumed automaticity, thereby releasing man's attention for the further improvement of the technic of living and the preparation of a more congenial environment Any interference by the individual in this trend of development or any tendency to resist it results in maladaptation, since it either maintains him on or forces him to an inferior level of living that is inadequate for his successful relationships with his fellow man Adaptation has anatomic and physiologic as well as psychologic significance and is based on the functional divisions of the central nervous system the more recently acquired unit exerting a retarding or inhibitory influence on the more primitive The anatomic level below the cerebrum is probably of greatest significance in this discussion since incomplete subordination of the function of this level to the needs of the forebrain probably constitutes the functional or

anatomic foundation for the neuroses Incomplete integration is seen in the amplification of the sense impressions, the increased conscious responses to emotions, the marked sympathetic manifestations and even the motor responses Complete integration inhibits the violence of response from the lower level while making use of its dynamic potentialities

The inner experiences of man are built on this foundation and we can further reconstruct our understanding of the development of the psychoneuroses by correlating the psychologic with the other processes of maturation whereby complete integration is attained The infant represents roughly a conscious though subcortical mechanism, perceiving imperfectly, feeling violently and responding to these emotions by instinctive action This is the starting point of human behavior, subsequent additions being determined not only by the stimulation of the physical and psychologic environment but also by the skill with which the child learns to develop the potentialities of the forebrain

The child lives in one of the most complex interactions of individual and environment, namely, that of the parent-child relationship, wherein the oversolicitous parent in his response to parenthood reacts on a more or less primitive level where exaggeration of expression of love and attention tend to predominate This, while favorable to the first stages of development, can become a contributing factor in the origin of the individual's maladaptation and subsequent neurosis

The over-idealistic parent, with zealous intent but little intelligent restraint, may impress on the child distorted standards of behavior as patterns of normal adult reaction No consideration is given to the fact that the child also responds primitively because of his incomplete development and therefore further distorts and elaborates these impressions to the point where he sets unattainable standards of behavior for himself which he assumes to be desirable measures of conduct and a necessary protection from the dreaded consequences of self indulgence Self restraint, instead of objective behavior, becomes the means to his ideals This represents a physiologically expensive mode of behavior This may be called overmanagement of self, since autonomic functions continue to absorb the attention

Often the child tries to modify the exhausting tension of this type of existence by seeking the psychologically tonic effect of approbation If parental approbation is missing or withdrawn, some substitute is found, but since approval in any form is a treacherous and capricious ally, dependence on it creates an obvious insecurity The normal increase in the strains of the environment accentuates this insecurity Exposure to temptation increases, while relaxation of restraint is made to seem more alluring by the examples of the unpunished self indulgence of others Thus conflicts are created and heighten the already existing tension

This summary has included the normal preface to adolescence which usually ends in normal emancipation or revolt It has also indicated the pattern of the primitive response which often persists in the sensitive individual determining his type of maladaptation to life If in early adult life the individual cannot drop his emotional dependence and his overvaluation of sensations his stabilization is maintained on an inadequate level and complete integration is absent His thinking is largely influenced by feeling his psychologic and physiologic reactions are characterized by exaggera-

tion or even violence, and equilibrium is maintained at an extravagant cost of constant self management. Normal reactions, such as resentment and hate, are inconsistent with his idealistic codes and are suppressed. Obstacles to progress are never tolerated with poise and security but are met with grim determination and a rigidity of purpose that exhausts the individual and often causes secondary somatic or vegetative symptoms. Underneath the appearance of moderate self assurance that is maintained by success achieved under auspicious circumstances or at unreasonable cost, there lies a welter of conflict. Self pity, as a protective mechanism, supplements in large part the persistent drive for approbation. Enjoyment and contentment are dependent on tangible success and are seldom if ever related to relaxation or ease. A drive to be right at all costs and in all ways develops an intolerance of attitude that further complicates the individual's life.

It is my impression that this form of maladaptation is productive of such a state of masked tension that the individual is unable to withstand any moderate degree of frustration and loses his resistance to the normal physiologic affective depressions. No matter what the precipitating cause may be, the neurotic response of this type of individual usually is a depression, and, while it is common to speak of this as a reactional condition, I question the advisability of such a nomenclature, since it is not an impossible environmental situation which by its severity causes the person to collapse, but a specific disability in the patient due to his inferior technic in living and consequent inability to withstand any moderate obstacle.

The symptoms prodromal to the active depression are of considerable significance. The underlying maladaptation is usually unrecognized by the patient, but he recognizes that something is amiss and attempts to surmount his uneasiness by redoubled efforts at self management, thereby aggravating his condition by the abandonment of rest and relaxation. Any number of alarming sensory symptoms appear and perplex the patient. Frequently the depressive symptoms begin only when the patient is no longer able to stand this uncomfortable condition. Finally, however, the depression develops and is less well tolerated than the physical discomfort, since its associated psychologic dysfunction renders the individual incapable of any task requiring mental application. Such a state represents the failure of the individual in his self management and, as a patient, he succumbs to illness with resentment, intolerance and despair.

This attitude of resentment toward the malady is an important diagnostic feature, since it often differentiates this condition from the manic-depressive psychosis wherein the patient accepts the illness as an inevitable punishment for his unworthiness. Probably the difference between the psychoneurotic depression and other forms is not one of degree in a similar or the same process, although one may fuse into the other. Possibly the difference lies in the attitudes and inner experiences of the individual. Certainly the psychoneurotic depression is usually more clearly and closely associated with the patient's dynamic maladaptation and is less closely dependent on so-called mood swing. It is often impossible to make a differential diagnosis—certainly there are no pathognomonic signs or symptoms.

In the psychoneurotic depressive state the symptoms are less constant than the attitudes of the patient. Feelings of unreality and even false beliefs and fixed ideas may appear in transitory episodes. Suicide may

become a problem as an expression of the patient's resentment toward the world that has threatened his progress toward success. The patient accepts his pessimistic interpretation of his present status as a true representation of the future, believing that others recognize the validity of his assumption but are too kind to acknowledge it. Suspicion follows and leads him to avoid social contacts. When the disturbance in cerebration causes failure in attention, and indecision becomes marked, the patient fears that he is "losing his mind." He views all bodily and sexual symptoms as indicative of a failing physical apparatus. These fears, added to the anxiety, further increase the tension to the point at which agitation may result.

The patient's attitude toward his illness presents a difficult picture. While bent on proving the seriousness of his disability as demonstrated by the unfavorable comparison of his present with his past performance, he appears unable to endow this form of illness with any of the characteristics usually associated with other disease processes. He is at first intolerant toward the stated cause of his illness, he has no faith in psychotherapy and has little or no interest in the significance of his symptoms.

Lack of time restricts the discussion of treatment. I shall, however, refer to some of the major points. Therapy has certain phases. Attention is first centered on the explanation to the patient that his illness is a condition resulting from the strain of the preceding maladaptation. Repeated emphasis should be given to the favorable prognosis. Attention is next given to the education of the patient for an understanding of the normal function of the central nervous system and its correlation with the mental processes and inner experiences of man. The presence of the many sensory symptoms provides ample material for the practical explanation of the interrelationship of the physical and emotional factors. Following this informative phase of the treatment there is a period in which the patient's actual maladaptation and the critical problems that have developed as a result of this neurotic maladjustment are considered and formulated for a practical insight. The last stage of the treatment is centered around the reeducation of the patient for a better objective adaptation.

This categorical outline of the treatment has to be adapted to the patient and correlated with the various progressive stages of his convalescence. The initial period of frank emotionalism often ends in a brief phase of false optimism resulting from the reassurance and the superficial insight that the explanation of the nature of the illness has provided. However, with this decrease in depression the patient becomes more aware of the underlying anxiety and apprehension. His attention becomes focused less on self and increasingly more on his physical and psychologic environment. As he becomes more objective and begins to attain insight, an alarming sense of discouragement often appears and is confused with the former sense of depression. It is at this stage that the patient begins to acknowledge his actual problems and may even sense the close relationship between these and his maladjustment. This period should include a frank and searching survey of the patient's life by the patient and the physician, with the latter guiding and interpreting the emotional reactions of resentment and rebellion that may result from the material exposed. Subsequently insight must be formulated and applied for a better adaptation. Until some definite degree of achievement in the practice of

his new insight is attained, the patient seldom regains any of his sense of well being. During this phase the patient requires great supervision and support lest his discouragement and petty failures precipitate a chronic anxiety state. It is imperative that the relatives be educated to the needs of the patient during convalescence lest any competitive situations with those nearest him develop.

I should like to return for emphasis to the first and last phases of the treatment. It is expedient to stress repeatedly the definition of the nature and purpose of the illness until the patient has come to accept it as a fact before beginning any discussion of the more obvious emotional and situational problems. If the patient can be brought to a realization that the illness is a result of a long period of strain, he is then in a better position to accept the necessary therapeutic requirements of rest and temporary relinquishment of all responsibility until some degree of total efficiency has been restored. In the last stage of treatment the patient's attempts at rehabilitation should be directed toward a fractional resumption of his normal life. He must be protected from the influence of an elation during this period, since the initial attempts at normal adaptation should be made while the patient is still sobered both by his illness and by the import of his newly acquired insight.

SUMMARY

1 As a variant of the psychoneurotic maladaptation, the psychoneurotic depression is characterized by emotionalism and sensory discomfort indicative of a thalamic dysfunction.

2 Environmental strain acts only as a precipitating cause of the depression.

3 The fundamental maladaptation represents a faulty use of the total equipment and is often due to persistence of immature patterns of response.

4 Treatment varies only slightly from the usual treatment of the psychoneuroses. It should be directed primarily toward reeducating the patient to understand and use his normal equipment more completely, objectively and easily.

ABSTRACT OF DISCUSSION

DR WILLIAM NELSON, St. Louis. While what I have to state embraces certain points of divergence of views, I want to pay tribute to Dr. Kimberly's elucidating and terse presentation. I can't think of a psychoneurosis as developing always out of a parent-child relationship. I accept Dr. Kimberly's view of the inadequacy of the personality to meet life's situation on the part of the individual who becomes psychoneurotic. One thinks, of course, of the early experiences of an individual in connection with parental relationships or parental substitutes. However, there are certain things in the individual who is potentially inadequate, anatomically and physiologically as well as psychologically that make for failure in his adjustment. These factors may be many or few. There are certain states that tend to induce an attitude of psychoneurosis. I like to think of the psychoneurosis as a mode of dealing with one's experiences rather than based on its etiologic development, and think of the etiologic evolution in terms of a rather manifold experience coming to an organism in life that is not integrated properly and not able adequately to deal with those experiences. Many different situations in life that tend to develop this must be included. I have some well authenticated cases of psychoneurosis, from a rather close analysis in which the earlier childhood of the individual has been of a fairly normal character. I say "fairly normal" in proportion to the experiences that that individual has had come to him. However, there are certain stresses in life to which the potential psychoneurotic is not subjected in earlier life that come later,

and so the psychoneurotic attitude may not be manifest until later, whereas a potential situation does exist. So that I would rather shift the emphasis in psychoneurosis to have its meaning in the mode of dealing with the experiences rather than in the character of evolution, because the basis for evolution, as I say, comes from many different aspects. I must think, then, of the psychoneurosis as a disparity between the adequacy of the individual and the experience that he has had, and I must think of it as a mechanism of escape from a situation. Therefore it constitutes a fabrication, a substitution, and the individual fools himself into believing that certain factors are responsible for the situations that do not exist. So far as the treatment aspect of the disease is concerned, I think that Dr. Kimberly's is quite satisfying. First, the analysis of the situation, having the patient conversant with the problem, before remedial measures are attempted. Second, the plan of persuasion and acceptance either by direct or indirect approach in bringing about an expansion of the personality.

DR. CHARLES H. KIMBERLY, Stockbridge, Mass. I think that perhaps I have been a little too hard on the parents. I agree that many of the psychoneuroses seem to be escape mechanisms but it is my impression that this type of neurotic depression is more a result of the individual's drive for perfection. I think that I have indicted the parent too severely, not meaning to do this as much as the whole environment of childhood, when the patient-to-be begins to think that it is necessary for him to be perfect, he wears himself out trying to do everything that is right. I think that I accepted the point that it is not the parent entirely but, perhaps, the whole overprotective aura of childhood, the aura that is trying to develop this person into something he probably has no chance of ever being.

PRESENT STATUS OF THE X-RAYS AS AN AID IN THE TREATMENT OF GAS GANGRENE

JAMES F. KELLY, M.D.

AND

D. ARNOLD DOWELL, M.D.

OMAHA

In August 1928 Dr. J. R. Dwyer, one of the attending surgeons at St. Catherine's Hospital in Omaha, came to the x-ray department and inquired whether we had in the x-ray or physical therapy departments anything that might help him in treating a serious case of gas gangrene. The patient was a young man who had injured his knee in an automobile accident. He was in his twenties and, though a very robust individual, surgical consultants had advised against operation because the disease had extended to the groin. The patient was delirious and any surgical procedure seemed out of the question. We replied that there was nothing definite that we knew of but suggested that since the patient could not be moved from his bed we might use the mobile x-ray unit. He gave us permission to treat the man by any method that we thought might be of value and we used the mobile unit and the technical factors shown in table 1.

To those accustomed to giving x-ray treatments this seemed like an awfully small dose when a depth factor was desired, but the response was so remarkable and the recovery so rapid that the incident remained in our memory and, in a few cases following this similar treatment was given with the same startling results. In all, over a three year period, eight cases were treated which we shall call the first series. Table 2 shows the results obtained.

From the Department of Radiology, Creighton University School of Medicine.
Read before the Section on Radiology at the Fifty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

In the first series there were eight cases in which x-ray treatment and gas bacillus serum were given. In this series there were two deaths. Further analysis showed that both of these deaths occurred in the cases in which the trunk was involved. Recovery occurred in all six cases in which the extremities were involved.

The conclusions drawn after analyzing the results in the first series were that the x-rays were very probably

TABLE 1—Original Technique

Mobile x-ray unit 5-30 radiator type of tube
5 inch spark gap (approximately)
6 milliamperes
15 inch distance (approximately)
0.5 millimeter aluminum filter
3 minutes morning and evening for 3 days

TABLE 2—Results in First Series

Series	Number of Cases	X Rays	Serum	Extremity	Trunk	Living	Dead	Per Cent Dead
1	8	8	8	6	2	6	0	0
						0	2	100

of definite value in the treatment of gas bacillus infection when the extremity was involved but, since death occurred in both cases in which the trunk was involved, certainly there was no evidence of its value in these cases. However, realizing that we used a very low voltage type of radiation, we thought that by increasing the voltage and the depth dose we might be more successful in the future when the trunk was involved if we gave a heavier type of radiation. The recommendations we¹ made on reporting our first group of cases before the Radiological Society of North America in 1931 was that more cases be treated with x-rays when the opportunity presented and that if the trunk was involved the treatment given was to be with greater voltage and greater depth effect than that employed in our first series. After a period of three years during which time we treated two cases, one in which an extremity and one in which the trunk was involved, both patients living, we wrote letters to several colleagues who had treated cases and collected as much data as possible on their work. To our two cases we added thirty more by this method. These thirty, with our own two, we put into the second group of cases, which we shall term the second series.

In the second series, of thirty-two cases treated with the x-rays, serum was administered in only thirty cases. However, we were mainly anxious to know the effect of the x-rays in the trunk cases as compared with extremity cases, so we divided them accordingly. There were eight cases with trunk involvement and all eight patients lived while of the twenty-four with extremity involvement five died. These results were somewhat contrary to the results in the first series. The results in the first series would lead us to believe that recovery should occur in all cases in which an extremity is involved and that death should occur in all trunk cases, while results in the second series would lead us to believe that recovery should occur in all the trunk cases and that death should occur in at least some of the extremity cases, since there were five deaths in this group.

Further analysis of the extremity cases in the second series brings out the facts shown in table 4, namely, that there were thirteen cases of the twenty-four in the extremity group in which amputation was not done and the thirteen patients lived, and out of the remaining eleven extremity cases in which amputation was done only six patients lived and five died. This table shows the high mortality in this group of cases.

The proportion dead in this small series who had amputation was 45 per cent. We then combined all the cases in the first and second series and they are shown in table 5. The figures in this table show the relative mortality in the trunk and extremity cases of the first two series of forty patients. The table shows ten trunk cases and thirty extremity cases. The two dead in the trunk group occurred in the first series and we believe that as far as x-ray therapy is considered the result may be attributed to inadequate treatment. The next fact evident is in the no amputation group, and this is indeed startling. In the extremity group of seventeen cases in which amputation was not performed there were no deaths, seventeen cases of gas bacillus infection with 100 per cent recovery. In the extremity group in which amputation was performed the result was not so good, there were thirteen cases with five deaths, or a mortality of 39 per cent, and this is about the usual mortality in other series reported in the literature.

The reason for the high mortality in the second series in the extremity cases led us to investigate the hospital records of the five patients who died and it brought to light the following facts:

1 The first man died two and a half hours after the ligature sloughed off a large vessel in the stump on the ninth day. He had apparently recovered from gas gangrene. This might be recorded as an accidental death.

2 The second man died of a pulmonary embolism on the twenty-third day, the embolism followed some repair work on the stump. He also had evidently recovered from gas gangrene.

TABLE 3—Results in Second Series

Series	Number of Cases	X Rays	Serum	Extremity	Trunk	Living	Dead	Per Cent Dead
2	32	32	30	24	8	19	5	20
						8	0	0

TABLE 4—Cases in Second Series in Which an Extremity Was Involved

Series	Number of Cases	Extremity	No Amputation	Amputation	Living	Dead	Per Cent Dead
2	32	24	13	11	13	0	0
					6	5	45

3 The third man died on the third day after admission. He received only two x-ray treatments and failed to rally after an amputation. He had been severely injured. Shock was undoubtedly a factor in this man's death and he had insufficient x-rays to be properly considered as having had x-ray therapy.

4 The fourth man received 100 roentgens the first day and 90 roentgens the second day of his disease and no further x-ray treatment, dying on the fifth day, eight hours after an amputation. This was insufficient treatment, treatment should be given twice each day for at least three days.

5 The fifth man was one on whom the admittance diagnosis was diabetes mellitus with impending coma. He had a gas

¹ Kelly, J. F. The x-Ray as an Aid in the Treatment of Gas Gangrene. *Radiology* 20: 296 (April) 1933.

bacillus infection in a diabetic ulcer. He died on the third day following an amputation, after receiving only two doses of x-rays. This also was not sufficient treatment. The post-mortem showed extensive bronchopneumonia.

In a final analysis of these five deaths in the second series one might honestly eliminate two of the five cases in which death occurred, as far as gas bacillus infection as a cause of death is considered. For instance, the

TABLE 5—Total Cases First and Second Series

Trunk Cases	No Amputation	Amputation	Living	Dead	Per Cent Dead
10	10	0	8	2	20
Extremity Cases	No Amputation	Amputation	Living	Dead	Per Cent Dead
30	17	13	17	0	0
			8	5	39

TABLE 6—Results in Third Series

Series	Number of Cases		X Rays	Serum
3	10		10	11
Extremity	Trunk	Living	Dead	Per Cent Dead
14		14	0	0
	2	2	0	0
No Serum	Living		Dead	Per Cent Dead
5	5		0	0

first man who died was one who died two and one-half hours after the ligature sloughed off a large vessel in a stump on the ninth day. He obviously bled to death after he had apparently recovered from the gas gangrene. The second man died of a pulmonary embolism on the twenty-third day. The embolism followed some repair work on the stump. He also had recovered from the gas gangrene. In the other three deaths in the amputation group gas gangrene cannot so easily be ruled out as a factor, and these three deaths with the two deaths in the trunk cases in the first series make a total of five deaths due to gas gangrene in the first and second series.

Encouraged by the results obtained using the x-rays as an aid in treating gas bacillus infection in the first two series, we decided to send a questionnaire to radiologists² and surgeons throughout the country who we thought might have had some experience with the work and in answer to this questionnaire we received data on sixteen additional cases. All the sixteen patients lived and this is the result that we hoped to attain at the time we reported our first series—namely, that others throughout the country would treat gas bacillus infection with the x-rays when the opportunity presented itself and by this means the results of the x-rays would more quickly be determined. We hope of course that the day will come when all patients with gas gangrene when an adequate dosage of x-rays is used as an aid in treatment, will recover. We are encouraged to believe this is possible when we study the series of cases reported in answer to the questionnaire recently sent out.

2. For permission to include their cases and the assistance given through correspondence the authors are indebted to Drs. J. J. Faut, Tyler, Texas; J. Philip Cogley, McVicken, Hanchett and J. L. Stech, Council Bluffs, Iowa; Albert P. Condon, Charles Newell, Howard B. Hunt, H. F. Johnson, J. Dewey Bigard, Roy W. Fours, A. P. Overgaard and E. A. Connolly, Omaha; E. A. Merritt and Isidore Lafran, Washington, D. C.; B. Weems Turner, Houston, Texas; L. A. Milkman, Scranton, Pa.; W. O. Squires, Coffeyville, Kan.; James T. Case, Chicago; Irvin I. Levi, Anniston, Ala.; Fred M. Hodges, Richmond, Va.; and E. W. Powe, Lincoln, Neb.

The results obtained in the third series are shown in table 6. All sixteen patients had x-ray treatments but only eleven had serum. All lived, so evidently the five in this group who received no serum recovered.

As regards the status of amputation this series adds definitely to the opinion we have held for some time, namely, that it is an unnecessary therapeutic procedure. There were twelve patients who did not receive amputation, and all twelve lived. Two patients in the series received amputation and lived regardless of that fact (table 7).

In table 8 the mortality rate of the three series is compared. In the first series the death rate was 25 per cent. In the second series it was 9.3 per cent and in the third series it was 0 per cent.

The question of the use of serum is still undetermined. In the first series all patients received serum. In the second series two patients received no serum and recovered. In the third series five patients received no serum and recovered. Table 9 shows the total number of patients treated and the total number not receiving serum. All patients who did not receive serum lived. However, in spite of this we do not see fit to recommend the omission of the use of serum at this time. We also recommend the use of tetanus antitoxin, as tetanus developed later in one case in this series in which serum was omitted. The tetanus developed during the patient's convalescence after the gas bacillus infection had subsided. The patient also recovered from the tetanus (table 9).

With regard to amputation we are very emphatic in our belief that amputation is not a therapeutic procedure for gas bacillus infection.

There were forty-four cases in which the extremity was involved. There were twenty-nine in which amputation was not performed and all twenty-nine patients lived. Out of the fifteen who had amputations, five died, a mortality of 33 1/3 per cent. In these five we included the case in which the ligature sloughed off a large vessel on the ninth day following amputation and

TABLE 7—Status of Amputation

Series	Number of Cases	Extremity	No Amputation	Amputation	Living	Dead	Per Cent Dead
3	16	14	12	2	12	0	0
					2	0	0

TABLE 8—Mortality Rate in Three Series

Series	Number of Cases	Living	Dead	Per Cent Dead
1	8	6	2	25
2	32	2	3	9.3
3	16	16	0	0

the case in which embolism occurred on the twenty-third day following recent repair of the stump. They are included in the amputation deaths but not included in the gas gangrene deaths as the patient had evidently recovered from the gas bacillus infection (table 10).

In table 11 we have tabulated the mortality rate in the three series. Of fifty-six patients fifty-one lived, five died of gas bacillus infection, giving a mortality of 8.9 per cent. We feel that this mortality rate compares favorably with any series of gas bacillus cases so far reported in the literature.

We attempted to do some animal experimentation using guinea-pigs, but we could not determine anything to our satisfaction as it seemed to us that the pig is too small an animal to inject with the virulent gas gangrene and then attempt to cure it with the γ -rays. If a real active strain of gas bacillus organisms was used it traveled so rapidly that it was soon necessary to treat most of the pig, and the combination of general body

TABLE 9—Use of Serum

Series	Total Cases	γ Rays	Serum	No Serum	Living	Dead	Per Cent Dead
1 2 3	56	56	40	7	7	0	0

TABLE 10—Amputation

Series	Total Cases	Extremity	No Amputation	Amputation	Living	Dead	Per Cent Dead
1 2 3	56	44	29	15	20 10	0 5	0 33

TABLE 11—Percentage of Mortality in All Series

Number of Cases	Living	Dead	Per Cent Dead
56	51	5	8.9

irradiation left too much undecided. Some pigs got well and some died and in the end we determined nothing. The question of the use of serum is also unanswered. At the time of our previous reports we recommended that gas gangrene serum be used and we still recommend that procedure, though there are several cases in these three series in which serum was not used and still recovery occurred. Probably some accurate experimental work on some suitable animals can answer the question of whether or not serum is required when γ -rays are used.

In concluding, it seems fair to state that the γ -rays up to this time seem to be definitely established as an aid in the treatment of gas gangrene both in extremity and in trunk cases, but it seems desirable to use serum and other measures and refrain from amputation until the patient has recovered from shock and from the gas bacillus infection. Amputation may then be necessary in a badly damaged extremity. In one case in our series this was done and gas gangrene recurred after the amputation. This area was immediately treated and the gas infection subsided. Since there is so much shock connected with amputation and furthermore since the diseased area is not all eliminated by some of these amputations, it again seems worth while to omit amputations as an obsolete therapeutic procedure for gas bacillus infection.

CONCLUSIONS

If one may be permitted to draw conclusions from such a small series of cases it seems to be definitely certain that γ -ray treatment is indicated in gas gangrene, both in extremity and in trunk cases, that the treatment should be started as soon as the disease is suspected and be given throughout its course, twice each day for at least three days.

Since infected tissue was left behind in many of the cases in which radical surgical operation was per-

formed, it raises the question as to what good the surgery really does. Then the mortality of the patients operated on is so terribly high as compared to those not operated on that again the use of amputation seems to be a distinct disadvantage.

One child 11 and one 12 years of age in the second series recovered after losing an arm and both had active gas infection above the site of the amputation, so the disease was not all eradicated by surgical procedure. The children recovered in spite of amputations but lost an arm.

The dark appearance shown by the involved tissues does not indicate a true gangrene, and it clears up following successful irradiation. It is probably localized cyanosis.

One should not be discouraged and think the patient is beyond hope when one is first called on to treat him, as this work was started on material of that type, when the surgeon had his back to the wall, so to speak, when the case looked hopeless, in other words, the type of case all radiologists are quite familiar with in the inflammatory group.

 γ -RAY TECHNIC

The γ -ray treatment should be given morning and evening over a period of at least three days and of sufficient voltage to insure penetration of the involved tissue from 90 to 100 kilovolts on an extremity, 1 mm aluminum filter from 130 to 160 kilovolts on the trunk with increased filtration, about 100 roentgens per treatment over each area.

- Finally 1 Use γ -rays in all cases
- 2 Use serum unless there is some contraindication to the use of serum present
- 3 Use tetanus antitoxin
- 4 Use local surgical procedures and antiseptics as indicated
- 5 Do not amputate for gas bacillus infection

ABSTRACT OF DISCUSSION

DR EDWARD H SKINNER Kansas City, Mo. My experience has been limited to the diagnostic features of this condition. I know of only two cases in the last four or five years within this territory. This is a condition which automatically diagnoses itself and if one does not know how to diagnose it early on the γ -ray film one certainly obtains gross postmortem evidence. The array of cases that Dr Kelly has reported is most convincing. The interesting feature is Why are there so many cases in his territory? Rhinehart, with all the cases that he has diagnosed around Little Rock has not treated any cases. He refused to open the discussion because he said he had never treated any cases. This situation seems to be somewhat unusual. With the sporadic appearances of these cases in certain areas and the almost epidemic appearance of them in other spots it is probably not fair for the roentgenologist to assume too much responsibility.

DR JOHN J FAUST Tyler Texas. I wish to emphasize that the surgeon not only does not need to amputate as Dr Kelly has stated, early in the disease but that the slashing of tissues for drainage is not indicated either, in spite of the teaching in the older textbooks. The blood supply to the area would be thus damaged, the infection spread and repair delayed. No longer is this infection an indication for an emergency operation. Cultures in my cases showed that not all of the gas-forming organisms are provided for in the serum prepared by Parke Davis & Co, whose serum was used. Two of the cases in which cultures were taken were *Bacillus claudstridium* infections. Since the serum was not for this organism it is possible that the γ -ray therapy may have been entirely responsible for the cures. The serum was labeled as specific

for B. Welchii and Vibrio septique. It is obvious that a serum cannot be prepared to be effective against all of the gas-forming organisms. In two cases cultures were positive prior to the treatments, but cultures revealed no gas-forming organisms after the patients had been given x-ray treatments. I heartily agree with Dr. Kelly in urging that the treatment of patients be carried on regardless of how far the cases are advanced. I have been criticized for stating that a portable x-ray machine may do the work. This is a condition demanding urgent consideration, and time lost in calling for a radiologist from a distant city as some one suggested might be fatal. By actual calibration Dr. Landauer, a physicist found that a portable machine will deliver 45 roentgens per treatment. I am not certain that a heavier voltage is indicated. Frequent irradiation at eight-hour intervals maintaining more nearly a saturation dosage in the affected area may be adequate. In view of the fact that one of my patients had both gas gangrene and tetanus in spite of the prophylactic dose he was given, one wonders whether the proper dose was given or whether a larger dose is not indicated in such cases.

DR. W. WARNER WATKINS, Phoenix, Ariz. Because of my commenting at staff meetings of the hospitals in which I work on this work of Dr. Kelly's, one of our surgeons, in desperation was induced to try this method. The case was an amputation not primarily for gas gangrene but for a serious crushing injury to the leg. The patient developed gas gangrene in the stump below the knee and it spread to the thigh as far as the hip. The surgeon remembered the comments and called for x-ray treatment. Two treatments were given and the effect was dramatic, with an immediate drop in temperature, no further extension of the gas infiltration, and a fairly prompt recovery. This surgeon has raised the question of treating all compound fractures with x-rays to prevent gas gangrene. I have not been able to say whether it might or might not prevent the development of gas bacilli in tissue. I should like to know what Dr. Kelly thinks about this.

DR. JAMES F. KELLY, Omaha. In answer to Dr. Skinner's question as to the epidemic feature of this disease in and about Omaha I must call attention to the list of men who contributed to this series of cases, showing that they are from various parts of the country. Only about eight of these cases in a period of eight years are from my own service. Those who contributed are named in the paper. Concerning the question of diagnosis in Dr. Rhinehart's cases, since they all showed gas in the tissues and had clinical evidences of gas gangrene they should be considered gas bacillus infections. I do not care to enter into the bacteriology of this disease because I do not know enough about it. If they have an infection with a gas-forming organism they should be treated. Concerning the question of Dr. Watkins as to the value of the x-rays in prophylaxis I wish to state that one patient in this group received a treatment on admission to the hospital and one on the second day. No further x-ray treatment was given and he died on the fifth day. The x-rays did not prevent the disease in this case. I do not think the x-rays should be depended on as a prophylaxis but should be used throughout the active course of the disease. It was intended to go into the problem of prevention in guinea-pig experiments but we could not get results consistent enough to warrant any conclusions. It is helpful if one can get surgeons so enthusiastic that they will turn the cases over to the radiologist before the gas bacillus infection appears; then one can watch them, treat them earlier and have a better chance to cure them. The number of exposures necessary to cover the infected area varies but all the involved tissue should be treated. At a distance of 15 inches one may not cover the entire field if not two or three exposures are made. The entire extremity should be treated.

Milk Fat.—The fat of milk is already emulsified and so is more readily available to the body than the fats of other common foods except eggs. But the outstanding nutritional advantage of milk fat over other common food fats is the association with it of the fat-soluble vitamins, particularly vitamin A.—Sherman H. C. Food and Health New York Macmillan Company 1934

OSTEOMYELITIS AT COOK COUNTY HOSPITAL

WITH AN APPRAISAL OF ORR'S METHOD OF TREATMENT

MARCUS H. HOBART, M.D.

EVANSTON, ILL.

AND

DONALD S. MILLER, M.D.

CHICAGO

At a meeting of the Chicago Orthopedic Club the winter of 1935 at which Dr. H. Winnett Orr spoke on his treatment of osteomyelitis there was considerable discussion pro and con as to its value. Several different views were expressed. Some claimed unequaled good results with this method, others unrivaled poor results stating that it was no better than other ways. As a consequence no definite conclusion could be reached.

It was determined, therefore to review the record of cases of osteomyelitis treated by Orr's method in the orthopedic service at Cook County Hospital with the hope of throwing more light on the subject. Hence this compilation.



Fig. 1—Syphilitic osteomyelitis of the skull

The orthopedic service of Cook County Hospital is divided among six physicians. Most of the cases of chronic osteomyelitis together with some of the acute ones, are sent to the orthopedic service, but occasional cases are treated in the general surgical services, of which there are about twenty-two. This discussion is confined to the orthopedic service since it was felt that this was sufficiently diversified to give a rather general view.

As many of these patients comprise the ignorant poor the disease often was neglected, so that the cases are apt to be as severe and hard to cure as could be found in my group throughout the country. Therefore, if these could be cured by any means the results among private or educated patients should be better.

Then too since there are six attending surgeons handling these cases the personal variation of carrying out Orr's method should give an index to its general value.

From the surgical service of Northwestern University Medical School and of Cook County Hospital, Chicago.
Read before the Section on Orthopedic Surgery at the Eighty-Sixth Annual Session of the American Medical Association, May 14, 1936.

There is an enormous amount of literature on the treatment and results of osteomyelitis. The various methods of treatment have all had their period of advocates with varying degrees of successes. The Orr method of treatment seems to have outlived the critical eye and is still the accepted method. The reader is referred to the articles by Orr¹ and Hey Groves²

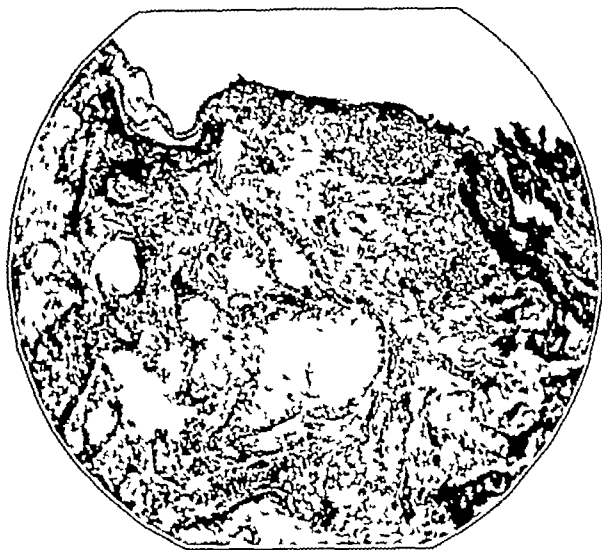


Fig 2 (case 1)—Squamous cell carcinoma formed in osteomyelitic ulcer

Although more than 375 patients have been operated on and asked to return for follow up, only one third have responded for a final check up. It may be assumed, therefore, that the majority of these patients may have become symptom free, and hence their absence. The cases reported here number 108, with 135 admittances to the hospital. The patients are referred to the outpatient orthopedic clinic from the examining rooms and consequently acute osteomyelitis is seen usually in the surgical wards as emergencies. Adults by far outnumber children since the latter are admitted to the children's ward.

ETIOLOGY AND COURSE OF THE DISEASE

The greatest percentage of cases was directly due to trauma of one sort or another. It is obvious that industrial hazards and modern methods of conveyance still contribute to the majority of these cases. Contact osteomyelitis in spite of the careful work of Koch,³ Mason⁴ and others still remains an important etiologic factor in osteomyelitis. Direct surgical osteomyelitis cases following open reduction of fractures and the like reach a high percentage.

The usual course of the direct type of osteomyelitis is one having an uneventful period of convalescence, requiring one or, at the most, two operations for a

cure. By this type is meant those cases of trauma following compound fractures, or direct implantations of bacteria following cuts and open wounds, frequently found in civic and industrial cases. No metastases have been seen following this type.

The patients with a hematogenous acute type follow a definite up and down course, are frequently readmitted for subacute inflammations of soft tissue and bone, and not infrequently remain invalids for life. Several cases have been seen in which the bones show extensive necrosis with bone abscesses but without a single complaint from the patient.

The extension form of osteomyelitis presents marked local manifestations with extensive bone necrosis and is frequently found in soft tissue infections of the hands.

The acute hematogenous type occurring in children is by far the most malignant in character, more toxic generally and recurs both locally and metastatically more often than the direct type. These patients return frequently, suffer skin infection and are subject by this chronic sepsis to anemia and amyloidosis. The contact osteomyelitis responds best to treatment, a thorough bone cleansing usually sufficing. The extension osteomyelitis is more disabling, requires soft tissue drainage and in many cases produces large massive bone necrosis.

Two cases of syphilitic osteomyelitis are reported, one involving the skull (fig 1), the other the ankle. Both patients had draining sinuses with pain. Each case responded well to antisyphilitic treatment with potassium iodide and mercury.

The majority of cases in this group of 108 occurred in adults between the ages of 20 and 40. Those of children and preadolescents were seen infrequently because of treatment in other wards.



Fig 3 (case 2)—Squamous cell carcinoma formed in osteomyelitic ulcer

COMPLICATIONS AND SEQUELAE

As shown in table 2, complications are not as uncommon as was supposed. The three cases of squamous cell carcinoma arising from chronic osteomyelitis are important because radical treatment in the form of amputation seems to be the only method of choice. Two of these occurred in sinuses of one and one-half years' duration (figs 2 and 3). The third occurred after a chronic draining sinus of forty years' duration.

¹ Orr H W. A New Method of Treatment for Infections of Bone. *Tr Sect Orthop Surg A M A* 1923 p 138. *Listerism Am J Surg* 4 465-485 (May) 1928. *The Treatment of Osteomyelitis and Other Infected Wounds by Drainage and Rest Surg Gynec. & Obst* 45 446-464 (Oct.) 1927. *Osteomyelitis in Cyclopedia of Medicine*, Philadelphia F A Davis Company. *The Prevention of Accidents and Complications in the Course of Treatment in Chronic Osteomyelitis* read before the Section on Orthopedics at the Annual Meeting of Bristol Medical Association Dublin 1933.

² Groves E W H. *The Treatment of Infected Open Fractures Brit J Surg* 18 294 (Oct.) 1930.

³ Koch S L. *Hand Infections J A M A* 92 1171 (April) 6 1929. Koch S L and Kanavel A B in *Graham's Surgical Diagnosis Philadelphia W B Saunders Company* 1:457 1930. Koch S L. *J Indiana M A* 22 510 (Dec.) 1929.

⁴ Mason M L and Koch S L. *Surg Gynec. & Obst* 51 519 (Nov.) 1930.

(fig 4) It would seem, therefore, that chronicity of drainage with irritation to epithelial proliferation, as Brunschwig⁵ brings out is not the primary cause but rather a constitutional diathesis of some sort. The type of malignancy reported in all three cases is that of a hornifying squamous cell carcinoma.

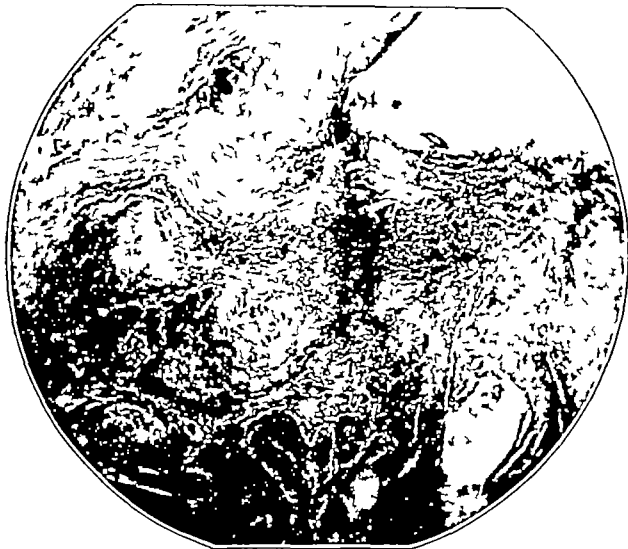


Fig. 4 (case 3)—Squamous cell carcinoma formed in osteomyelitic ulcer.

The second group of complications was that of bilateral toxic neuritis of the eighth nerve occurring in two male patients, one 16 and the other 17 years of age. These two patients had hematogenous generalized

TABLE 1—Orr Treatment or Modification in Series of 108 Cases of Osteomyelitis

Orr Treatment				Modifications of Orr Treatment 13%	
Favorable Results 62%	Undetermined 4%	Unfavorable Results 21%		Favorable 12.6%	Unfavorable 87.5%
Bone Involved	Number	Number	Comment	Number	Comment
Tibia	19	4	14 Still draining only 2 with pain	3	No cast used drainage not thorough
Femur	9	4	1 death (septic) 3 still draining	3	No cast used
Hip joint	3	2	Still draining		
Humerus	3	1	Pain no drainage		
Hand					
Phalanx	4				
Metacarpal	1				
Elbow joint	2				
Scapula	1			1	Excellent result no cast used
Fibula	4	1	Still draining		
Knee	1				
Ulna	3	1		1	Drainage no cast used
Foot					
Metatarsal	4				
Calcaneus	2			3	1 excellent result 2 draining no cast used
Knee joint	6			3	Still draining no cast used
Clavicle	2				
Radius	1				
Shoulder joint				1	Pain present no cast used
Total	65	5	22	16	

osteomyelitis deafness occurring rather suddenly from six months to one year after the bone infection.

The third group of complications is that of pathologic fractures two in number. One occurred after neglect of treatment in a woman aged 50 in whom an acute

suppurative arthritis developed, with indifferent conservative treatment a fracture developed at the lower third of the humerus. The second patient, a man aged 43, developed a rather sudden hip condition, following tonsillitis, and two weeks afterward fractured the neck of the femur. The fourth complication was a case of toxic encephalitis in a child aged 9 years, simulating a brain abscess. The abscess was drained through a subtemporal decompression. An uneventful

TABLE 2—Complications and Sequelae of Cases Reported (108)

Type	No.	Age	Etiology	Duration Before Diagnosis	Result	Per Cent of Total
Malignancy from osteomyelitis	3	54, 51, 73	Idiopathic, Idiopathic, Hematogenous	1 yr, 1½ yrs, 40 yrs	Amputation, Amputation, Died	2.6
Toxic neuritis 8th nerve	2	16, 17	Hematogenous, Hematogenous	6 mo, 1 yr	Bilateral deafness, Bilateral deafness	1.9
Pathologic fractures	6	41	Hematogenous	2 wks (?)	Symptom free (healed)	1.0
Toxic encephalitis	7	50	Hematogenous	9 mos	Undetermined	
	8	10	Hematogenous	1 wk	Symptom free (subtemporal decomp)	0.6

recovery ensued. The patient is at present symptom free both from the bone infection and from the cerebral involvement.

TECHNIC OF TREATMENT

We have attempted to follow Orr's dictum of treatment with proper drainage and rest. The cases of fever, pain and roentgenologic evidence of infection are opened widely and debrided but cautiously (fig 5) with an attempt to prevent further extension into normal bone. At times the cavity is swabbed with iodine and alcohol. Petrolatum packs are inserted loosely and a cast is applied. The cast is left on until healing occurs but occasionally is replaced by a new one. The outer dressings may be changed but the petrolatum

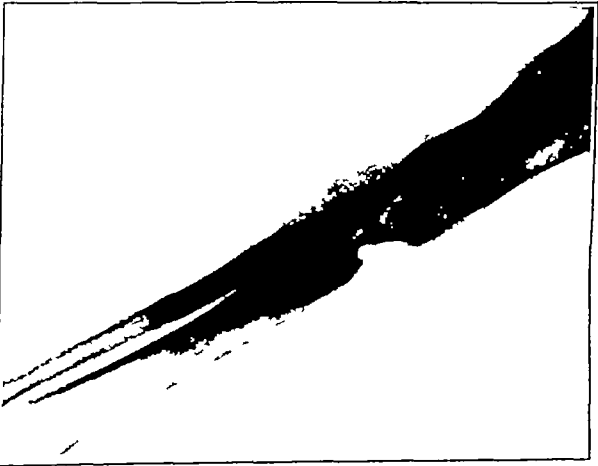


Fig. 5—Nonunion of tibia following debridement of osteomyelitis.

pack is allowed to remain for four weeks when it is removed carefully and a new petrolatum pack inserted. This is done to prevent the gauze from adhering to the wound. In recurrent cases with discharge but without pain more conservative methods are used and sequestrums are removed only under roentgenologic evidence. Sinuses of soft tissues are curetted and allowed to heal from the bottom. Brodie's abscesses are opened, normal bone being spared as much as

⁵ Brunschwig, Alexander. Epithelialization of Chronic Osteomyelitis Cavities. A Precancerous Lesion. Radiology 24: 62 (May) 1935.

possible. Very conservative measures are used to remove infected bone in cases of extension osteomyelitis of the hand.

COMMENT

Although the number of reported cases is relatively small, the results of this method are extremely gratifying. It is difficult to judge the healing powers of the various bones, the period of convalescence in healing and the general response of the patient because of the variability of the technic, the period of operability and the virulence of the organisms in the production of osteomyelitis. All that can be said is that this method has given 62 per cent symptom-free cases (table 1). Twenty-one per cent of cases treated by the Orr method failed to heal to date. Those cases treated by some modification of this treatment, i. e., without cast or without packing gave 12.5 per cent of cures in the sixteen cases reported.

CONCLUSIONS

1 The Orr method of treatment still remains the treatment of choice for osteomyelitis.

2 Hematogenous osteomyelitis shows no great advancement of cures, whereas direct osteomyelitis responds well to direct, thorough, bone osteotomy under proper conditions. Extension osteomyelitis still remains a problem of the general surgeon and, with the proper treatment of infections, osteomyelitis should be reduced.

3 Complications in this series are large. Three cases of malignancy of soft tissue (26 per cent), two cases of toxic neuritis of the eighth nerve (19 per cent), two pathologic fractures (19 per cent) and one case of toxic encephalitis (0.96 per cent) occurred in this series of 108 cases.

636 Church Street

ABSTRACT OF DISCUSSION

DR. R. J. DITTRICH, Fort Scott, Kan. From an analysis of the pathologic changes seen in osteomyelitis and the course of the disease, it is noted that there are a large number of variable factors which make the disease complex and the outcome uncertain. The most important feature in the treatment is adequate drainage and this, together with immobilization in plaster casts, constitutes a method of treatment that is sound in surgical principle and consistent with ideas of infection in general. It may be said that no method of treatment is fool proof yet a strict adherence to the principles advocated by Orr will yield a high percentage of satisfactory results. It has been my experience to see more frequently local recurrences in healed lesions and metastases in other portions of the skeleton. There is no way by which these conditions can be foreseen or avoided. However, it is hoped that some method of immunologic therapy may be developed by which these complications can be effectively prevented and the morbidity of the disease thereby minimized.

DR. JACOB KUŁOWSKI, St Joseph Mo. My recent report from Steindler's clinic, includes 323 cases treated by the Orr method, in 65 per cent of which healing had occurred up to the time of this investigation, with a general mortality of less than 3 per cent. Twenty per cent of the patients were still under treatment, about 2 per cent required amputation and the result was unknown in about 11 per cent. In an earlier paper it was shown that the average period of convalescence until healing occurred was dependent on the following factors. In general lesions treated primarily or initially by this method averaged six months; those treated secondarily (after some other form of treatment had been instituted), nine months. Foci in the upper extremities healed in six and one-half months as against nine months for foci in the lower extremities. Lesions complicated by sequestrum or sinus formation, as well as infected compound fractures, healed in ten months. The most stubborn group showed a mixed bacterial infection and required almost

fifteen months. In this smaller series healing occurred in more than 76 per cent of the cases. The vast majority of these cases were in the subacute and chronic stages. There is more or less general agreement regarding the Orr method in these stages of the disease. Argument and some confusion continues relative to the acute hematogenous lesions. The pendulum is swinging toward conservatism in degree. It is helpful to remember that surgical intervention is not indicated until there is definite local evidence of suppuration. Perhaps early diagnosis and immediate drainage have been overemphasized at the expense of a careful evaluation of the surgical risk. The fault rests with the individual surgeon and not with this method. Common sense neglect of generally accepted preoperative rules of procedure reflects unfairly on and discredits sound axiomatic surgical principles of drainage. However it is also true that the conservative postoperative technic of the Orr method allows more extensive surgery in the acute stages in properly selected cases, than would otherwise be feasible. The Orr method meets all the therapeutic requirements presented by a disease in which chronicity and its attendant devastating sequels was formerly inevitable in about 80 per cent of survivors. This standardized universal method, suitable to the rank and file of physicians can combat a disease so apparently contradictory and variable in its clinical and pathologic manifestations. The entire clinical life history of the disease has been finally reflected in its complications which predominated the picture until more recent times. Now the dovetailedness of its phenomena is clearly evident, since the vast majority of sequels are dependent on the local skeletal situation. From this perspective there is a clinical harmony on the basis of which the Orr method was evolved and on which it must stand or fall, namely, the primary and secondary control of the disease.

DR. J. E. M. THOMSON, Lincoln Neb. The Orr method fulfils the requirements that have been outlined by most writers on this subject better than any other that I have been able to try, and I had my fling during the war at the Carrel-Dakin method, later at various antiseptic packs and dressings, and more recently at maggot traps only to swing back to the petrolatum pack. The method, from a practical standpoint, offers the patient more comfort during his period of convalescence and gives the physician or surgeon less anxiety and demands less labor in his care of the patient. Lastly, it is far more economical for the patient and also for the hospital, in the way of supplies and equipment in spite of the fact that one is often embarrassed by the fragrance that emanates from these cases, which after all, is far more distressing to the friends and relatives than it is to the patient himself. I am aware of the fact that a great many of these compound fractures and open wounds can be cleaned up thoroughly and closed and that they will heal by first intention. It hardly seems necessary to prolong convalescence by putting in a petrolatum pack in every one of these cases, because, should infection develop and the symptoms so indicate the wound could be opened and the Orr method applied. There are several rather interesting things about this paper that impressed me. First in making an assumption one should be very careful and have it well founded. For instance simply because of the fact that of the one third of the entire group of patients who came in for check up there were 62 per cent healed and symptom free, it would seem preposterous to assume that the other two thirds were cured. On the other hand had two thirds of the entire group come in for check up and been found symptom free, one might be willing to assume that the other third at least had as good a break as the two thirds who came in. I am sure that the authors did not wish to be misleading in this statement, and I mention the fact only in order that a correction may be made. Perhaps the most important feature of this paper was the fact that it called attention to the frequency of complications in osteomyelitis. To think of 7.36, or almost 7.5 per cent, of osteomyelitic patients having complications seems rather high, particularly in private practice. However, one should be apprehensive of these complications and ready to meet these problems as they arise. Lastly I think that the authors' deduction with respect to the fact that direct osteomyelitis healed more readily by the Orr method than did the hematogenous type is correct. This gives a basis by which one may make a prognosis in these cases that will have more chance of healing by the Orr method and gives an opportunity to judge what the outcome is going to be.

DR. EDWIN W. RYERSON, Chicago I read in the program A Report of Five Hundred Cases Treated by the Orr Method "What it boils down to is a report of about 125, and I think that is a little misleading

DR. JOHN PRENTISS LORD, Omaha I learned the first principles in the treatment of osteomyelitis under Dr. Moses Gunn as early as 1880. He taught that wide incision, adequate removal of the disease, and packing the cavity with crystals of boric acid cured a large proportion of the cases. From 1893 I practiced general surgery exclusively until 1922. In those earlier days the general surgeons handled osteomyelitis. I followed the principles learned from Gunn in securing early, adequate, maintained drainage. In the early years of the Nebraska State Orthopedic Hospital, as chief surgeon for a number of years, with Dr. Orr as associate I had many old, neglected, extreme cases of osteomyelitis in children. We found that in removing the gauze packings, then in general use, there was an elevation of temperature after every dressing and it took a day or two or three for these temperatures to return to normal. The question was: What could we do to avoid this? I had been dabbling with Beck's paste. I had an adverse reaction against Beck's paste. Then there were some who injected petrolatum undertaking to cure chronic sinus involvement in the same way—a failure, of course because unsurgical. I devised a means of pouring these gutters mostly in shin bones with petrolatum, covering with gutta serena tissue and allowing the discharge to find its way out from its edges. That unfavorable experience following the gauze dressings was eliminated, and they pursued a smooth course. In later years Dr. Orr amplified this petrolatum treatment. Indeed he must be given credit for having established a system that has been very successful, perhaps on a par with any other. Having been a general surgeon however, with the general surgeon's psychology, I had somewhat of an adverse reaction against treating all my osteomyelitis cases with petrolatum. In selected cases I did use it, but I sought to eliminate the major unpleasant objectionable feature—the odor. I melted petrolatum with 10 or 11 per cent of paraffin and used mostly boric acid petrolatum believing that it would stimulate granulations. I held this plug in with paraffin-linen mesh strapped on with adhesive plaster. As this soft material would exude through the mesh as the cavity became smaller it was scraped off with a sterile spatula and the wound margins were painted with mercurochrome because iodine smarts. The gauze pads were changed often. We didn't have the stench and we didn't have to move these patients out on the porch or out into the orchard. By changing the pads as indicated extravasation of discharges into the dressings or into the plaster was thus prevented and the very objectionable odor greatly minimized. Operators desiring to continue the petrolatum treatment may wish to accept this suggestion of mine.

DR. MARCUS H. HOBART, Evanston, Ill. Dr. Kulowski's figures agreed pretty well with ours: 65 per cent of cure in cases of osteomyelitis treated by this method. I agree with Dr. Thomson that the use of the petrolatum treatment in compound fractures seems unnecessary. The compound fracture can be opened later if infection is superimposed. As to assuming that the 200 odd cases that we didn't report were cured, I said at the beginning of the paper that a person might assume that they were cured, but they were not included in the 108 cases in the statistics that we compiled. As to Dr. Ryerson's remarks on the 500 cases I think that they are very well taken. Five hundred was the general impression that we had at first of the number of cases. When we got the compilation we found that there weren't that many, and an attempt was made to correct the title. I apologize for that title. It has been worrying me ever since it came out. As to Dr. Lord's treatment: early adequate drainage. I believe is one of the primary and most important parts of this treatment and it is perhaps the thing that allows the condition to clear up. In the letters that we sent out five out of six of the attending men were unanimously in favor of Orr's method for the treatment of osteomyelitis. I may say that ten years ago when we started on the service, we hated to see a case of osteomyelitis come in because we felt once osteomyelitis always osteomyelitis. We feel that, with the Orr method of treatment, we can get at least 62 per cent of cures.

RESTORATION OF THE ORBIT AND REPAIR OF CONJUNCTIVAL DEFECTS

WITH GRAFTS FROM THE PREPUCE AND LABIA MINORA

GRADY E. CLAY, M.D.

AND

J. MASON BAIRD, M.D.

ATLANTA, GA.

Grafts from the prepuce and labia minora have not heretofore been used for conjunctival grafts and it is the ideal tissue as a substitute for conjunctiva. There is plenty of tissue available for such grafts and it has all the appearance of perfectly normal conjunctiva a very short time after it has been grafted. The graft from this source is very thin and contains no hairs and very little subcutaneous fat. It has a pinkish color and can easily be cut to fit the area desired.



Fig. 1—Tumor recurrent after second surgical removal before conjunctival graft.

Skin grafts used in restoring conjunctival defects have been successful but are most unsatisfactory to the patient in that they are uncomfortable and unsightly, desquamation is always present, and there is most frequently a disagreeable odor. For those reasons this new type of graft seems to be an ideal substitute for the conjunctiva.

In the correction of symblepharon and the removal of large growths from the conjunctiva for which grafts are necessary, grafts from the prepuce and labia minora are ideal because they have the appearance of conjunctiva and do not desquamate. Grafts for such defects are cut slightly larger than the area to be covered and then with very fine silk, are carefully sutured in place. The conjunctival sac is then filled with boric acid ointment and a pad applied with not too much pressure. This is allowed to remain for three days; the dressing is then changed daily; the sutures are removed on the fifth day and the pad is removed after one week.

Read before the Section on Ophthalmology at the Fifty-Seventh Annual Session of the American Medical Association, San Francisco, May 14, 1936.

In restoration of the socket, the socket is opened and prepared in the usual manner and the graft is cut and shaped to fit the socket. Plenty of fine silk sutures should be placed at the margins of the lid and the graft placed in position, two double armed sutures being placed through the upper lid to hold the graft smoothly against the tarsus and the same sutures placed through the lower lid the sutures being tied on the surface of the skin. The socket should be well dilated and kept so for two weeks if an artificial eye is to be worn successfully afterward. For that purpose an artificial eye with a glass ball cemented to the back of the eye best fills out the socket. This is placed in the socket with plenty of boric acid ointment, the lids are kept sutured a pad is applied with pressure and left for four days and thereafter daily dressings with slight pressure are applied. The lids should then be separated at the end of two weeks and an artificial eye should be inserted at once.

The mucous membrane of the vestibule of the vagina (between the inner margins of the labia minora and the outer margin of the hymen) is smooth, glistening and devoid of glands and of hair follicles. Such a graft is easily obtained from this region of the female external genitalia, and subsequent healing leaves no deformity.

The field of operation is prepared with soap, water and a solution consisting of equal parts of acetone 5 per cent mercurochrome and alcohol. A quadrilateral incision is made within the vestibule between the inner margin of the labia minora and the edge of the hymen. The upper transverse incision is made at about the level of the upper margin of the vagina and the lower transverse incision well down near the center of the fossa navicularis. Two vertical incisions one near the inner margin of the labia minora and the other along the

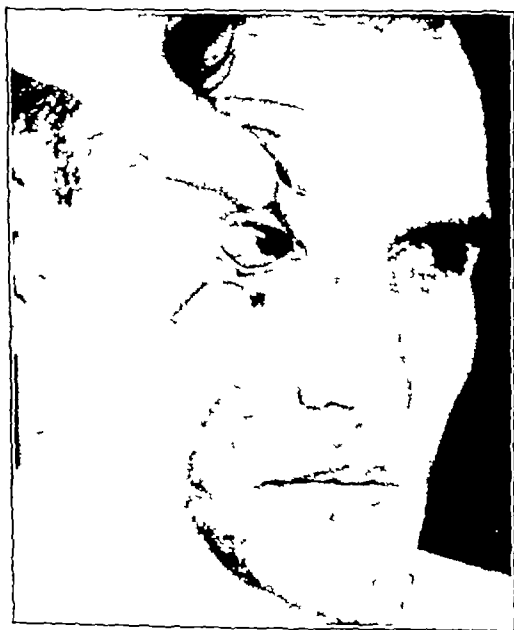


Fig 2—Appearance after graft

outer edge of the hymen complete the quadrangle. In this way a strip of mucous membrane approximately 3 by 5 cm in diameter, is easily obtained. There is very little bleeding at the site of the graft. The incision is closed with interrupted sutures of zero plain catgut. If necessary a similar graft may be obtained on the oppo-

site side. Healing in the cases done was by primary union without any deformity of the external genitalia. The skin from the prepuce is obtained by a circumcision, special care being used in the preparation, and as much as possible of the inner surface being employed, for here the skin is much more like mucous membrane.



Fig 3—Eye before surgical removal of hemangioma

In the reports of two cases, the first demonstrates the conjunctival graft and the other the restoration of the socket.

CASE 1—P. H., a healthy man, aged 35, first seen in June 1931 at the Steiner Clinic of Grady Hospital, had had a small tumor on the right eye at the outer canthus two years before. It had been removed surgically twice during that period, the last time being six months previously, and had recurred with much more rapid growth. Examination showed a large tumor of the ocular conjunctiva at the outer canthus, which was slightly elevated and about 6 mm in diameter and extended across the limbus for about 1 mm. The tumor seemed to be slightly attached to the sclera, as it was not movable. The tumor was very vascular but not pigmented. A diagnosis of carcinoma was made and enucleation was advised, which the patient refused. One week later the tumor was removed and was found to be very adherent to the cornea and sclera near the limbus, but there was such a large denuded area that it was difficult to cover it with conjunctiva. This was done, however, and radium needles were planted under the conjunctiva and removed four hours later. The following day there was a sloughing of the conjunctiva and superficial layers of the sclera, this area 7 mm in diameter, remained as such. July 9 the graft from the foreskin was used and sutured in place. The eye was filled with boric acid ointment and dressed on the second day. At the first dressing there was very little discharge and the graft seemed to be taking perfectly. On the fifth day the graft had a good color, the sutures were removed and on the seventh day the pad was removed with a perfect take of the graft, as shown in figure 2. The patient was last seen in April 1936 with no evidence of return of the tumor and suffering no discomfort from the graft. The use of radium produced a severe keratitis near the limbus which has given some trouble since, but there has been no discomfort from the graft.

The pathologic report by Dr. E. L. Bishop, pathologist of Steiner Clinic stated that sections showed sheets of partly hornified epithelial cells with pearls and spines. The cells were hyperchromatic and fused together. In one area the cells were much smaller and very hyperchromatic and almost spindle

shaped. Mitoses were not especially numerous. There was evidence of moderate infection, with a little connective tissue stroma and numerous lymphocytes.

The diagnosis was epidermoid carcinoma, grade 2, moderately sensitive in some portions.

CASE 2—Miss C. H., aged 22, was seen Jan. 13, 1933. At the age of 2 years a small reddish growth was noticed on the

orbit below, and the tumor, which filled the lower orbit, dissected out. The conjunctiva from the lower lid and part of the ocular conjunctiva were cut away with the diathermy current and the lower lid was allowed to become adherent to the eyeball. Figure 3 shows the tumor before operation. The result of the operation was striking, as shown in figure 4, but the eye was not freely movable, owing to the adhesion of the lower lid to the eyeball, and closure of the lids was not perfect. An exposure keratitis began to develop and a few months later the ocular conjunctiva nasally and above became involved in the tumor mass, radiation was used during this period with no reduction in the size of the mass but with loss of lashes and retraction of the upper lid, and by August 1934 the eye became so uncomfortable that enucleation was necessary. When the eyeball was removed it was necessary to remove all the remaining conjunctiva, since it was involved in the original tumor, the lids, of course, became adherent and there was no remnant of a socket.

July 9, 1935, the restoration of the socket with the mucous membrane from the labia minora was attempted. The socket was freed and dissected of any scar tissue, and Dr. W. R.



Fig. 4—Appearance after removal of tumor

ball and lower lid. This gradually increased in size so that at the age of 15 the lower lid was markedly swollen and the eyeball was proptosed. A tumor was removed at that time by a local surgeon. Following this the tumor did not reappear until five years before the present admission and then the swelling of the lower lid began to occur and gradually grew with an



Fig. 5—Socket after restoration by labial graft

increasing proptosis. Examination revealed a marked proptosis of the left eye, the ocular conjunctiva especially at the limbus below was swollen and a dark red. This was true of all the conjunctiva below and of the lower lid. The lower lid was markedly swollen and a tumor mass was easily felt. August 14 under surgical anesthesia an attempt was made to remove the tumor, which was diagnosed as hemangioma. An incision was made parallel to the border of the lid near the margin of the



Fig. 6—Artificial eye in reformed socket

Holmes dissected the graft from the vagina giving us a graft 1 inch (2.5 cm) wide and 2 inches (5 cm) long, stating at the time that more tissue was available. This graft was very thin and had no subcutaneous fat. It was carefully sutured to the lid margins above and below, and at the inner and outer canthus a ball was inserted with much boric acid ointment. The lids were sutured together and a pressure bandage was applied. The socket was not dressed for three days. At the first dressing there was only a slight discharge; the lids had separated except for the central area, which was left and daily dressing of boric acid solution was used. Slight pressure was kept up for ten days at which time the lids were separated and the ball was removed. The graft made a complete take and at that time had the appearance of a normal conjunctival socket. The socket after one month did not contract since a ball was kept in place but not enough culdesac was present below to permit the wearing of an artificial eye. September 8 a similar graft was obtained from the opposite side of the vagina and it was placed below. An incision was made along the lid margin below and the mucous membrane was pushed back; the lower lid was dissected up and the graft was sutured to the lid border and mucous membrane. The dressings were the same as in the previous operation. On the tenth day the graft had

made a perfect take, figures 5 and 6 show the socket, which has all the appearance of a normal conjunctival socket. There has been no discomfort or discharge, and there is no deformity of the vagina.

CONCLUSION

Tissue from the prepuce and labia minora are ideal for all conjunctival grafts, and enough tissue is available for the complete restoration of the socket. Such tissue has none of the objectionable features of ordinary skin grafts.

384 Peachtree Street

Clinical Notes, Suggestions and New Instruments

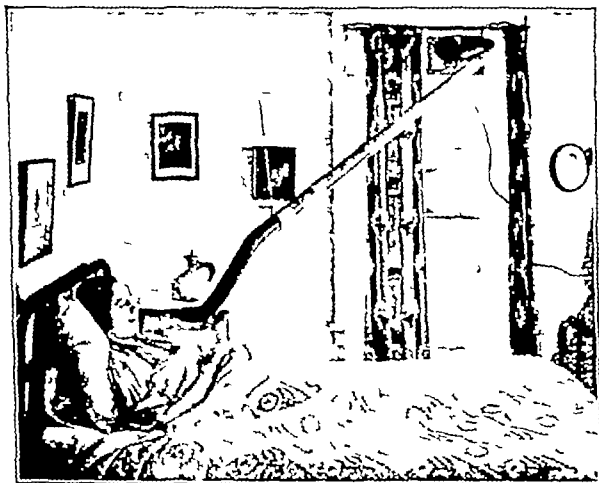
BRINGING OUTSIDE AIR INSIDE AN INEXPENSIVE SUBSTITUTE FOR OXYGEN THERAPY

J. E. CREWE M.D. ROCHESTER MINN.

For many years, in cases of pneumonia or tuberculosis, and in a few cases of advanced cardiac diseases, I have used with excellent results the apparatus that is here described. The apparatus consists essentially of a small blower and a pipe about 2 inches in diameter. The blower is attached to an aperture in a board of adjustable length so made that it can be fitted beneath a raised window. The pipe extends from the blower to near the patient's face. The middle portion of the pipe is rigid but can be made of adjustable length. To this portion of the pipe is attached a cord and counterweight. The cord runs through a hook or pulley that can be screwed into the ceiling or into an overhead frame. The ends of the pipe are flexible. Thus, the pipe can be hung in any convenient position.

The purpose of the apparatus obviously, is to supply gently moving outdoor air directly to the patient. In extremely cold weather the patient's chest is adequately protected and sometimes a woolen cap is worn, but it is rare for patients to complain of the cold air. They obtain so much relief from it that they object to having the air supply discontinued.

The chief advantage of the apparatus is that it can be used where oxygen is not available because of problems of trans-



The apparatus in use in a home.

portation or of expense. The other advantage is that the atmosphere in the patient's room can be kept at a comfortable temperature and he lies or sits with his movements unhampered by heavy bed clothes or a tent. Moreover, it is sad to say that in many dwellings of our country the patient does not have a room to himself. In fact often a large family must live in one or two rooms. In such cases the atmosphere of the room must be kept warm in winter and is vitiated by heating stoves and by the breathing of other members of the family.

Those physicians who practice in rural districts which have been hard hit in recent years will appreciate the circumstances which first suggested to me an apparatus of the sort that has been described. I was called to see a child, aged 5 years, who had pneumonia. The child was cyanotic and the air in the small, tightly closed house was very bad because of the crowded condition of the house and the fumes from a kerosene stove. The outdoor temperature was -20°F . I asked the father to find if possible a piece of 3 or 4 inch pipe. He was fortunate in finding an old boiler flue about 7 feet long. A hole, large enough to admit the pipe, was cut in a board and the board was fitted snugly into a partly opened window. The cold air rushed in and almost at once the cyanosis disappeared. The simple apparatus was used until the child recovered.

Since then, on occasions I have reverted to this crude apparatus, for instance, in homes where electricity has not been available to operate the blower, I have used rain spout or any other pipe that could be procured and have fitted elbows to the external end of the pipe to catch the prevailing wind.

In one case, during an extremely hot spell, a patient, aged 75 years, who had pneumonia, was experiencing great difficulty in breathing. With all windows open and several fans running, he was not relieved. The pipe was attached to a window, all other windows were closed, and a spray from a garden hose was directed past the inlet of the pipe. At once the breeze of cool, moist, outdoor air that was directed near the patient's face gave much relief from air hunger. After that experience I attached to the inlet of the pipe an automobile hot water heater and caused cold water to circulate through it.

Considerable experience over many years has convinced me that, by the methods described, most patients can be given all the oxygen they require, in nature's own mixture. Recently the apparatus was exhibited at the meeting of the Minnesota State Medical Association and attracted favorable interest, particularly among rural practitioners.

11 First Street Southwest

ACUTE BRUCELLOSIS

DEATH FROM PULMONARY EMBOLISM

WILLIAM R. BAGLEY M.D. SELMA C. MUELLER, M.D. AND
ARTHUR H. WELLS M.D. DULUTH MINN.

Infections with *Brucella* organisms are being more frequently diagnosed in recent years than formerly, and the clinical and pathologic aspects of the disease are more widely recognized. The old names "undulant fever" and "Malta fever" are giving way to the more scientific term "brucellosis,"¹ mainly because the clinical syndromes of the three causative organisms, *Brucella abortus*, *suis* and *melitensis*, cannot be differentiated. Although patients having the disease usually recover, an occasional one succumbs. We are reporting here a case of Brucellosis having the unusual occurrence of fatal pulmonary embolism.

REPORT OF CASE

A white man, aged 46, an urban laborer, presented himself for examination because of progressive weakness and cough of three months' duration. The cough was unproductive. His appetite had failed and he had suffered from constipation since the onset of the malaise. He believed that he had been having fever a good share of the time, but he had continued to work in spite of marked exhaustion. The past history revealed nothing of note except an appendectomy nineteen years before and "gravel" in the right kidney following that.

The patient was well developed and seemed quite comfortable. The only physical phenomena of note were a temperature of 101.6°F , pulse 80, blood pressure 108 systolic and 65 diastolic, marked oral sepsis, and chronically infected tonsils. Laboratory examination revealed a hemoglobin of 76 per cent, 3,930,000 red blood cells and 5,500 white blood cells, of which 59 per cent were polymorphonuclear cells, 40 per cent lymphocytes and 1 per cent basophils. The patient's blood serum agglutinated *Brucella melitensis* (abortus) antigen in a dilution of 1:320 on first examination and later in a dilution of 1:1,280. Blood cultures subsequently showed growth of *Brucella abortus* apparently of the bovine type.

During his stay in the hospital the patient's temperature ranged from 100 to 104 occasionally dropping to 99. He per-

¹ Evans, Alice. Chronic Brucellosis. J. A. M. A. 103: 665 (Sept. 1) 1934.

spired profusely soaking the bedclothes several times each night. On the fourth day of hospitalization, three teeth were extracted under local anesthesia, followed by some rise in temperature. On the eleventh and twenty-third days of his hospital stay, 50 cc. of whole blood from a brucellosis convalescent was injected intramuscularly. The patient seemed to be slightly improved for a few days, but his temperature still rose to between 101 and 102 each afternoon. On the twenty-fifth day of hospitalization he complained of a pain in the left thigh at 5 p. m. At 9 25 he suddenly experienced a severe pain in the left leg followed shortly by pain in the precordium, cyanosis and dyspnea. In spite of stimulants, nasal oxygen and artificial respiration, he died at 9 45 p. m.

At necropsy an antemortem clot 8 cm. in length was found plugging the left pulmonary artery, and several fragments of the same clot were present in the right pulmonary artery. In the left femoral vein, 4 cm. below Poupart's ligament, remains of a thrombus were found. Both iliac and femoral veins showed smooth, noninjected internal surfaces free from inflammatory changes. Microscopic sections of the embolus showed the characteristic architecture of an antemortem thrombus entirely free from unusual inflammatory elements.

There were evidences of an active toxic or inflammatory process widespread through the internal organs. The posterior portions of both lungs showed a moderate diffuse congestion with frequent scattered neutrophils in the interstitial tissues and many pigment-laden phagocytes in the alveoli. The 2,400 Gm. liver showed a moderate diffuse neutrophilic infiltration of its sinusoids and rather frequent small focal accumulations of neutrophils and monocytes, at times obliterating native tissues. The soft granular dark red pulp of the 375 Gm. spleen was severely congested with red blood cells and contained many pigment-laden phagocytes and occasional neutrophils. There was a mild swelling of the epithelial cells of the convoluted tubules of the kidneys, with finely granular debris in the lumen but no inflammatory cell infiltration of these tissues. No ulceration of the intestine was found, but the mesenteric lymph nodes were slightly enlarged and soft. Throughout the entire body, no localizing inflammatory processes could be demonstrated. A guinea pig, inoculated with postmortem blood, showed no lesions after thirty days and blood cultures made at the same time remained negative.

COMMENT

In a search through the American literature we could find no references to occurrences of massive pulmonary embolism in patients suffering from Brucellosis and only casual mention was noted of the occasional occurrence of phlebitis. In the French literature, however, Roger and Audier² report cases of phlebitis complicating this disease, and reference is made to cases in which pulmonary embolism occurred.

In the case here reported, marked infection of the alveolar processes and gums was present. This apparently antedated the Brucella infection, and this must be considered a possible focus of infection for the subsequent development of phlebitis with resultant pulmonary embolism. Roger and Audier bring up the question as to whether phlebitis in these cases is due to primary localization of *Brucella melitensis* in the veins or whether the phlebitis is due to secondary infection. They are of the opinion that there occurs a venous localization of a *melitensis* septicemia. In this regard it is interesting to note that an occasional complication of brucellosis has been a vegetative endocarditis from which *Brucella abortus* has been isolated.³

Goshay⁴ has recently observed a case of brucellosis in which edema and cyanosis appeared about the face and head. He believes that a thrombotic process occurred in the deep veins at the base of the brain. His patient recovered.

Of particular interest in the case presented here are the acute and fulminating course of the disease, the drenching night sweats during the last month of illness, the marked oral sepsis and death due to pulmonary embolism without clinical evidences of phlebitis until four hours before death.

324 West Superior Street

² Roger, H. and Audier, M. Phlebitis melitococcique. *Gaz. Hép.* 105: 589 (May 11, 1915).
³ Angle, F. E. Treatment of Acute and Chronic Brucellosis. *J. A. M. A.* 105: 939 (Sept. 21, 1935).
⁴ Goshay, Lee. Per oral communication to the authors.

Special Article

USE OF THE DERMAL PARASITICIDES

FRED WISE, M.D.

AND

JACK WOLF, M.D.

NEW YORK

This is one of a series of articles written by eminent dermatologists for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED

In this article we shall confine ourselves to a discussion of the use of parasiticides in the parasitic disorders occurring in dermatologic practice. A discussion of the use of these remedies in diseases of nonparasitic origin would lead us too far afield, since it would embrace almost the entire field of dermatotherapeutics.

In the accompanying list are the most important members of the group of drugs referred to as the parasiticides. They form the basis of present-day antiparasitic therapy. There are other remedies, some of which will be mentioned in the text, but these are purposely omitted in the list. The reasons for their use will be given. A thorough knowledge of the actions of a few valuable remedies and a sufficient acquaintance with their use is more important than the haphazard application of many. Much can be achieved by the proper combination of two or more of these medicaments in variations in their respective percentages and by the choice of the proper vehicle. For these reasons alone, even if for none other, many proprietary remedies may be justifiably condemned.

The parasitic group of diseases forms a not inconsiderable percentage of the total number of cases seen

Most Important Parasiticides

Peruvian Balsam	Sodium Thiosulfate
Chrysarobin	Betanaphthol
Pyrogallol	Sulfur
Iodine	Resorcinol
Mercury Bichloride	Salicylic Acid
Ammoniated Mercury	Benzoic Acid
Tar	Thymol
Phenol	Oil of Cinnamon

in the practice of dermatology. Indeed some of the members of this group probably affect a major percentage of the population of the United States. It may be said at the very outset that this fact accounts for the numerous remedies employed in the treatment of these skin conditions and also for the vast number of "patent medicines" offered to an innocent public. The credulity of the physician is similarly attracted.

The parasitic diseases affecting man are best grouped into those caused by (a) vegetable parasites, the dermatophytes which belong primarily to the group of mucorinales or fungi imperfecti and (b) animal parasites, including insects, acari and worms. While destruction of the parasite is the objective in the treatment of both there are material differences between these two groups and each shall be considered separately.

VEGETABLE PARASITES

At least two fundamental considerations are to be considered before the treatment of this group of diseases can be properly undertaken. The first is the manner of the action of the parasiticides, here better called fungicides, and the second is the response of the individual to his infection.

Strictly speaking, the term fungicide is largely a misnomer. Numerous *in vitro* experiments belie the fungicidal power of most of the remedies listed; some of them even lacking fungistatic powers in high concentrations. Chrysarobin, pyrogallol, sulfur and sodium thiosulfate will not restrain growth of fungi in concentrations of 1:10, salicylic and benzoic acids possess fungistatic properties only in dilutions of 1:50 and 1:40 respectively, but the combination of salicylic and benzoic acids, which forms the basis of the most commonly used antiparasitic ointment, namely, Whitfield's ointment, possesses fungistatic and fungicidal properties *in vitro* even in high dilutions. Iodine, phenol, betanaphthol and mercury bichloride are fungistatic in high dilutions and fungicidal in considerably stronger concentrations. Resorcinol, a very useful member of this group, is fungistatic in concentrations of 1:200 but is not fungicidal. Thymol and certain volatile oils such as the oil of cinnamon and the oil of clove are highly fungicidal even in low concentrations.

Clinically, there can be no question of the efficacy of these remedies. In the superficial dermatomycoses clinical cure, with negative microscopic and cultural examinations, is easily obtained as a rule even with those drugs which are mildly fungistatic *in vitro*. An explanation of the action of these remedies must therefore be sought on other than fungicidal grounds.

These clinically active remedies possess two common qualities in varying degrees: (1) they cause exfoliation of the upper layers of the skin and (2) they produce hyperemia when massaged into the skin. In addition almost all of them are reducing agents. As reducing agents they may cause destruction of fungi aerobic organisms, by depriving them of the oxygen so necessary to life. Exfoliation is produced either by a desiccant action such as that of resorcinol, in which the upper layers dry up and are cast off, or by keratolytic action such as that of salicylic acid, which causes swelling of the horny layer, which finally splits into scales and is exfoliated. In the superficial dermatomycoses the fungi living in the stratum corneum are thus cast off with the scales and clinical cure results without actual destruction of the fungi. Histologic examination of normal skin treated with ointments containing these fungicides shows vascular dilatation and evidence of inflammation, even though the latter may not be clinically manifest. This artificially induced inflammatory reaction may play a role similar to that of the natural inflammatory reactions, following infection with certain members of the ringworm group, in bringing about the death of the parasite. The latter consideration leads to the second of the two fundamental considerations, namely, the reaction of the host to the parasite.

The group of fungi calls forth responses in the human organism which place them immunologically with the bacterial group which produces what is designated as the hypersensitivity of infection. In this bacterial group the tubercle bacillus is the best known and most studied example. This group also includes *Bacillus mallei*, *Bacillus typhosus* and *Brucella abortus*.

Trichophytin, an extract prepared from certain fungi has been as helpful in advancing our knowledge concerning the dermatomycoses as has been tuberculin in the study of tuberculosis, and many analogies exist between the two. The most important of these are that the reaction is specific, is positive in a great percentage of adult people (in the United States) and therefore possesses only limited diagnostic value; is of the delayed type and is negative in most infants even when given

in large doses. The reaction can be elicited many years after infection and this state of altered reactivity probably lasts during the lifetime of the individual.

The length of time necessary for the development of the hypersensitive state—that is, the incubation period—varies with the individual and with the type of infection. The superficial dermatomycoses may call forth very little clinical response, and the trichophytin reaction may be negative even if the eruption has persisted for a long time. In the deep, severe, acutely inflammatory, kerion type of infection on the scalp, or in the bearded region, the reaction becomes positive at the end of from ten to fourteen days and the state of hypersensitivity that is developed is sufficient to destroy the fungi and permit the infection to go on to spontaneous healing.

The secondary lesions arising at a distance from the original focus, which on direct microscopic and cultural examination are usually found to be free from fungi, have their analogy in the tuberculids and are variously termed microsporids, epidermophytids and trichophytids, depending on the nature of the organism producing the infection at the source. The "ids" in the very acute infections, such as those of the scalp and beard go on to spontaneous healing within a relatively short period. In the case of the mycotic infections of the feet however the "id," which is almost always located on the hands and fingers, is apt to run a prolonged recurrent, chronic course, and is also apt to be more recalcitrant to treatment than the original focus.

The foregoing, in a general way, are fundamental considerations which form a necessary background for the proper therapeutic approach to the dermatomycoses. The specific remedies that have been found most useful are best considered by a discussion of the separate disease entities.

RINGWORM INFECTION

The most important member of the group, since it assumes major importance from the standpoint of incidence alone, is the ringworm infection occurring on the hands and feet, the so-called athlete's foot, dermatophytosis of the hands and feet. This disease has definitely been on the increase in recent years, since people have become more sport minded and have been exposed to the infection at golf clubs, beaches, gymnasiums and swimming pools. Dermatophytosis is looked on and classified with the superficial dermatomycoses.

There are primarily three clinical types which, very briefly, are described as follows:

- 1 The interdigital variety, with scaling between the toes varying from the mild grade to the severely macerated, white soggy epidermis, accompanied by fissuring, swelling of the toes, secondary dermatitis and pyogenic infection of the contiguous skin surfaces.

- 2 The acutely vesicular and vesiculobullous type, which usually appears on the sole of the foot and extends along the arch on to the dorsum of the foot. The vesicles are situated on an erythematous base, they rupture or become desiccated leaving crusted and finally superficial erythematous areas surrounded by a scaly collarette.

- 3 The squamous or hyperkeratotic type, which favors the sole of the foot, the arch and the region of the ankle. The lesion is usually well circumscribed rounded dry, scaly and erythematous.

The interdigital type of infection usually accompanies the other two varieties. Pruritus is the most important subjective symptom. It may be mild very severe or at times surprisingly absent. Hyperhidrosis is frequently present. Secondary infection may take place, producing lymphangitis and adenitis of the inguinal glands which may even go on to suppuration.

Involvement of the nails is manifested by their characteristic dull, lusterless, opaque appearance. Infection may produce deformity of the nail plate, the porcelain-colored streaks of leukonychia trichophytica or separation of the nail plate by an underlying hyperkeratosis.

There appears to be a widespread general impression that ringworm of the feet is so recalcitrant to treatment as to be considered incurable.

PRESCRIPTION 1—For Ringworm

R	Iodine	Gm. or Cc.
	Salicylic Acid	12
	Benzoic Acid	aa 36
	Alcohol 90 per cent q s	ad 1200

PRESCRIPTION 2—For Ringworm

R	Salicylic Acid	Gm. or Cc.
	Resorcinol	60
	Alcohol 90 per cent q s	ad 1200

PRESCRIPTION 3—For Ringworm

R	Thymol	Gm. or Cc.
	Oil of Cinnamon	aa 20
	Alcohol 90 per cent q s.	ad 1200

PRESCRIPTION 4—For Ringworm

R	Thymol	Gm. or Cc.
	Salicylic Acid	03
	Alcohol 80 per cent	10
		300

PRESCRIPTION 5—Whitfield's Ointment (Original Formula)

R	Benzoic Acid	grs xxv
	Salicylic Acid	grs xv
	Paraffin mol	5 II
	Ol coctis nucis	ad 5 I

PRESCRIPTION 6—Whitfield's Ointment (N F)

R	Benzoic Acid	Gm. or Cc.
	Salicylic Acid	120
	Wool Fat	60
	White Petrolatum q s.	50
		ad 1000

PRESCRIPTION 7—Ammoniated Mercury Ointment U S P

R	Ammoniated Mercury	Gm. or Cc.
	Wool Fat	100
	White Wax	50
	White Petrolatum	50
		800

PRESCRIPTION 8—Sulfur Ointment, U S P

R	Precipitated Sulfur	Gm. or Cc.
	Wool Fat	150
	Yellow Wax	50
	White Petrolatum q s.	50
		ad 1000

PRESCRIPTION 9—Chrysarobin Ointment, U S P

R	Chrysarobin	Gm. or Cc.
	Wool Fat	60
	Yellow Wax	50
	Chloroform	50
	Liquid Petrolatum	40
	Petrolatum q s	60
		ad 1000

PRESCRIPTION 10—Dusting Powder

R	Thymol	Gm. or Cc.
	Boric Acid	12
	Zinc Oxide	200
	Talc	
	Zinc Stearate	aa ad 600
Sig	Apply between toes each morning and after bath	

PRESCRIPTION 11—Dusting Powder

R	Sodium Thiosulfate	Gm. or Cc.
	Thymol Iodide	12
	Boric Acid	200
	Lycopodium	aa 100
	Talcum	aa ad 600
Sig	Apply between toes each morning and after bath	

The choice of the proper remedy diligently applied and continued in decreased concentrations long after the last vestiges of the disease have disappeared will serve to cure almost all cases. Diligence and persistence are the prerequisites of successful treatment. In the recurrent case treatment must be instituted with the appearance of the first signs of recurrence, usually with the approach of warm weather.

For the macerated, soggy, interdigital infection and for the dyshidrotic variety, alcoholic lotions are most suitable, for the hyperkeratotic variety, ointments are most effective.

In prescriptions 1 to 11 are given time-tried, time-honored and most useful remedies. These stand high in the list of eczematogenous substances and the possibility of sensitization to one or another of the ingredients, with an ensuing dermatitis, must always be kept in mind. The patient should be warned against continuing with the use of the remedy in case of irritation. It is most advisable to start with one-half the strength of the active ingredients as listed and gradually increase to full strength.

The 10 per cent solution of silver nitrate, so popular a decade or two ago, seems to have lost face and unfortunately so, since in the interdigital, macerated, fissured type infection it remains one of the most effective remedies.

The useful adjuvant to the various active medications listed, in every form of infection, is the hot potassium permanganate solution foot bath, about 10 grains (0.65 Gm) to the basin of hot water, the feet being soaked for one-half hour daily. In the very acute and very severe processes that incapacitate the individual and make walking impossible, soaks with potassium permanganate 1:2,000 or with Burow's Solution diluted 1:15 for three or four hours daily or continuous wet dressings, with these solutions, give the greatest relief and the most rapid objective improvement.

Unless fungi can be cultivated from the lesions on the hands they are to be considered as dermatophytids and should be treated with soothing, keratoplastic and mildly stimulating remedies. The choice of the remedial agent will depend on the clinical appearance, but antiparasitic treatment is not indicated.

For prophylaxis of ringworm of the feet, solutions of from 0.5 to 1 per cent of sodium hypochlorite are used in all adequately equipped gymnasiums, clubs and schools. Statistical studies show that the incidence of ringworm infection in these places has been materially reduced. Its use is recommended. It need hardly be added that walking barefooted is at all times to be avoided.

An approach to the treatment of ringworm of the scalp requires cultural studies and the mycologic classification of the parasite in every case. Ringworm of the scalp is caused by the microsporon and trichophyton groups of fungi, including both the human-pathogenic and animal-pathogenic varieties. The prognosis as to cure, by the use of topical remedies alone, depends largely on whether or not the fungus is of the animal variety, since the lesions in patients infected with an animal type of ringworm tend to go on to spontaneous healing. The animal type of infection is therefore amenable to treatment with the fungicides listed later.

Infections with the human variety of parasite are more resistant to topical agents even if used over a period of many months. In order to effect a rapid cure and to prevent the inconveniences associated with the isolation of children, recourse must therefore be had, in most instances, to epilation with x-rays. In children approaching puberty, the treatment should be conservative and consist only of the application of the milder antiparasiticides, since spontaneous cure takes place at that time. (The dangers of internally administered depilating drugs, such as thallium acetate, are too great to permit their general employment.)

Repeated mycologic examinations of hair and scales and, whenever possible, examination under a Wood's filter light are necessary during the course of treatment. The patient must not be discharged from observation until repeated examinations have proved negative.

The clinical appearance of ringworm of the scalp is varied but can be roughly divided into several groups. The most common in the United States is the dusty appearing, gray, finely scaly variety with oval or rounded patches, in which the hairs are broken off, from 2 to 3 mm in length, lusterless and lifeless in appearance. This variety is usually caused by *Microsporon Audouinii*. The disseminated form, with more numerous, smaller and more irregular patches, has large scales, heaped up and adherent, in which the hairs are broken off or matted between the scales. There is also a pustular variety most often produced by the ectothrix type of trichophyton. The inflammatory and suppurative processes may be mild or may be so severe as to produce large, boggy swellings with draining sinuses. This variety, known as *kernion celsi*, heals spontaneously and requires only mild antiseptic wet dressings and soothing remedies.

The practical therapeutic procedures consist first in isolation of the child from other children so as to prevent the transmission of the disease. Adults can be considered to be immune, although occasional adult infection does occur. The hair is to be cut short and kept short, washed with tincture of green soap daily or every other day, and the infected hairs are to be removed with epilation forceps, a few dozen at a time. A washable cap is to be worn at all times until the condition is cured. The following remedies and methods of treatment are suggested:

1 Ten per cent Iodine crystals in anhydrous wool fat. This is very effective and should be applied with a soft tooth brush morning and night. As soon as the reaction becomes severe, treatment is to be suspended for several days and then resumed.

2 Two per cent Tincture of Iodine, dabbed on liberally morning and night.

3 The preparation given in prescription 12.

PRESCRIPTION 12—For Ringworm of the Scalp

	Gm	or	Cc
\mathcal{R} Precipitated Sulfur	60		
Salicylic Acid	30		
Castor Oil	60		
Petrolatum q s.	ad	600	

Sig Massage in thoroughly morning and night

PRESCRIPTION 13—For Ringworm of the Scalp

	Gm	or	Cc
\mathcal{R} Pyrogallol	50		
Salicylic Acid	50		
Castor Oil	100		
Petrolatum q s	ad	500	

4 The preparation given in prescription 13.

5 Chrysarobin may be substituted for pyrogallol in prescription 13, but precautions must be taken to avoid the annoying conjunctivitis produced by chrysarobin when coming into contact with the eyes. The areas may be covered with zinc oxide adhesive plaster or with collodion.

6 The preparation given in prescription 14.

PRESCRIPTION 14—For Ringworm of the Scalp

	5	10	per cent
\mathcal{R} Ammoniated Mercury	3	5	per cent
Salicylic Acid			
Benzoinated Lard q s			

Irritants such as croton oil, oil of clove and oil of turpentine are used in the superficial variety in an attempt to induce suppuration, thereby converting the superficial into the kerion type. The use of these remedies is not recommended, since they will often produce pronounced scarring. This is not justifiable in a condition that can be treated by other, more satisfactory means.

The principles governing the treatment of tinea barbae are essentially the same as those of tinea of the scalp. Tinea of the bearded region in this country is usually of animal origin and the eruption is of the acute suppurative nodular variety, with boggy swellings and draining sinuses. The infection often goes on to spontaneous cure in a period of about six to twelve weeks. These cases require nothing more than mild antiseptic remedies such as wet dressings of 1:5,000 mercury bichloride and removal of the loose, diseased hairs, followed by the application of an ointment containing 5 per cent ammoniated mercury (U S P ointment mixed with equal parts of petrolatum). The less inflammatory, nonsuppurating type requires more strenuous treatment with the stronger ointments listed, x-ray epilation, or continuous epilation with forceps.

Tinea favosa, or favus, caused by the achlorion group of fungi, is a disease that is quite common in central Europe and is only rarely encountered in this country. It may occur at any age and may attack the scalp, the nails or the glabrous skin. On the skin the eruption is characterized by the pathognomonic sulfur yellow cups, scutula, which may be isolated and few or in juxtaposition, forming sheets covering large areas. It is easily cured by removal of the cups and by daily paintings with tincture of iodine diluted two or three times with alcohol, or with the milder antiparasitic ointments.

Besides the form in which one finds the typical yellow cups traversed by hair, lusterless and lifeless in its lower portions, favus is also present on the scalp in a pityriasisform and an impetiginous form. In the former, erythematous patches varying in size and number are distributed throughout the scalp covered with adherent, grayish scales. In the latter, one finds yellowish crusts. Microscopic examination of hair and crusts will establish the diagnosis.

On the scalp the lesions are extremely resistant to treatment and require continued and diligent application of remedies over a long period. The treatment is essentially the same as that of ringworm of the scalp, namely, the use of antiparasitic remedies and epilation. Good results are achieved with persistent treatment, and progress of the disease may be arrested. Some cases remain obdurate for a lifetime, others go on to spontaneous healing when destruction of the follicles leads to atrophy and permanent alopecia.

Tinea circinata is a superficial form common on the glabrous skin of adults and children, which may be caused by various fungi of both human and animal varieties. The lesions are circinate, distinctly outlined spots with clearing centers and with an unbroken erythematous border, which advances peripherally, is frequently vesicular and gives rise to lesions that may reach the size of a palm. A single lesion or

PRESCRIPTION 15—For Tinea Circinata

	Gm	or	Cc
\mathcal{R} Precipitated Sulfur	30		
Salicylic Acid	18		
Petrolatum q s.	ad	600	

lesions in large numbers may be present. The exposed surfaces of the body are most often involved. In children the scalp must be carefully examined and observed for a time after the body lesions have been cured. Treatment consists in painting the lesions daily with a 2 per cent tincture of iodine or daily application of the ointment given in prescription 15. An effort should be made to determine the source, in order to prevent further infection.

Tinea cruris, the old *eczema marginatum* of Hebra, is an erythematous superficial, scaly eruption in the crural region, which extends downward on the inner aspects of the thighs, sometimes extending upward to the pubic region and posteriorly to the buttocks. The eruption is well defined, sharply margined, with a definitely raised border which is at times vesicular. *Tinea cruris* responds readily to mild antiparasitic remedies and recurrence takes place only if treatment is discontinued too soon. The most pleasant method of treatment consists in the application of a shake lotion (prescription 16) painted on with a brush

PRESCRIPTION 16—*Shake Lotion for Tinea Cruris*

	Gm or Cc
R Resorcinol	4.8
Calamine	15.0
Zinc Oxide	25.0
Glycerin	12.0
Lime Water	15.0
Rose Water q s	ad 120.0

morning and night. Cases resistant to this treatment and requiring the addition of 5 per cent precipitated sulfur are rare.

Tinea versicolor, caused by *Microsporon furfur*, with its smooth or slightly scaly, fawn colored patches of varying size and shape, is found on the chest and back but may also spread to other areas. The eruption causes no symptoms, it is harmless and the individual presents himself for treatment primarily for cosmetic reasons. The eruption is found more often in those who have a tendency to perspire freely and therefore occurs frequently in the tuberculous. Daily baths using soap freely followed by vigorous application of a 10 per cent aqueous solution of sodium thiosulfate will cause the disappearance of the eruption within a week. Infection in the pubic region is often overlooked. It is wise to treat this area in a routine manner in all patients. Treatment must be persisted in for at least several weeks to avoid recurrence. The underclothes must be boiled.

Erythrasma, caused by *Microsporon minutissimum* affects the same areas as *tinea cruris* and is sometimes confused with it. Not infrequently erythrasma also affects the axillae. In contradistinction, erythrasma is more brownish red, is not elevated and has no raised vesicular border. The treatment is the same as that of *tinea cruris*.

MONILIA

The mycoses caused by yeastlike organisms have a striking resemblance to those caused by the ringworm group. They produce similar clinical pictures and affect the same areas. Mycologic studies are often necessary in order to determine whether one is dealing with ringworm or with yeast infections. Yet these organisms are not immunologically related. Patients with pure monilia infections react strongly to oidiomycin, an extract produced from the monilia group of organisms while their reaction to trichophytin is negative or, if positive is based on previous infection with ringworm organisms. Positive passive transfer tests may be elicited by various members of the ringworm group with serum from an individual urticarially hypersensitive to trichophytin whereas the members of the yeastlike group will give negative results with this serum.

The great folds and clefts of the body are the sites of predilection for infection with monilia and so one finds that the interdigital spaces the crural and anal regions the vulva the areas beneath the breasts in women and the abdominal folds in the obese, are the sites most often involved. The characteristic picture

in one of these large folds shows a grayish white sodden macerated band of variable width, usually narrow, running along the cleft, with an erythematous moist shiny area extending beyond the grayish border. Outlying satellite pinhead sized, papular, vesicular and pustular lesions are almost always present.

These infections occur more frequently in diabetic patients and in the obese. It is wise to study all these patients from this point of view and, whenever deemed advisable to reduce the carbohydrate intake. Wet dressings with a 0.25 per cent silver nitrate solution for from twenty-four to forty-eight hours followed by the use of the 4 per cent resorcinol lotion (prescription 16) will often be sufficient to effect a cure. An attempt must be made to keep the parts dry by the liberal use of dusting powder in these areas, and an attempt must also be made to prevent the skin surfaces from coming directly into contact with each other. Interdigital infection with monilia is very common. The clinical appearance and the treatment is the same as that of interdigital ringworm.

Erosio interdigitalis blastomycetica occurs chiefly in those keeping their hands immersed in water a great deal and therefore in housewives and persons employed in occupations such as canning and "soda jerking". The eruption is almost always located in the web between the middle and ring fingers extending on the sides of the fingers for a variable distance is shiny moist erythematous and at times covered with a central grayish sodden epidermis. Prophylaxis is the first principle of treatment. The hands must be protected against the effects of moisture by the use of rubber gloves or by abstaining from those processes requiring immersion of the hands. The eruption can readily be cured by painting a 5 per cent solution of silver nitrate on the affected parts morning and night, or by the daily application of a 2 per cent tincture of iodine solution. Sulfur Ointment U S P or Ammoniated Mercury Ointment, U S P are equally efficacious. These ointments should first be used in half strength, i. e., by mixing with equal parts of petrolatum or some other ointment base, and then, if necessary, used full strength.

Not infrequently changes in the nails and paronychia accompany the interdigital infection. The nails become lusterless, opaque and thickened, with transverse or longitudinal ridges. The eponychium becomes erythematous and edematous. These patients cannot be cured unless they abstain from the use of water on the skin. Locally superficial unfiltered fractional doses of X-rays

PRESCRIPTION 17—*Ointment for Perleche*

	Gm or Cc
1. Ammoniated Mercury	3.0
Salicylic Acid	1.0
Wool Fat	5.0
Petrolatum q s	ad 60.0

combined with the use of half strength Sulfur Ointment U S P or half strength Ammoniated Mercury Ointment U S P, gives the best results.

Erosio interdigitalis blastomycetica, paronychia and perleche are so frequently associated as to be considered a triad. It must not be accepted that all cases of perleche are due to monilia infection since cultural examination may show only streptococci and staphylococci. Perleche manifests itself by fissures at the corners of the mouth at times covered with a whitish pellicle on an erythematous base. In severe cases of long standing the mucous membrane of the cheek becomes involved. Pain may or may not be present depending on the depth and extent of the fissuring. Treatment consists in the daily application of a 2 per cent aqueous

solution of silver nitrate a 1 per cent aqueous solution of copper sulfate or of the ointment given in prescription 17

The use of wet dressings or the continuous water bath may give rise to a very superficial vesicular and

PRESCRIPTION 18—*Dusting Powder*

	Gm or Cc
R Sodium Borate	3a 8 0
Boric Acid	
Zinc Oxide	1a ad 60 0
Talc	

PRESCRIPTION 19—*Resorcinol Lotion*

	Gm or Cc
R Resorcinol	2 5
Zinc Oxide	
Talc	5a 30 0
Glycerin	12 0
Lime Water	15 0
Rose Water, q s.	ad 120 0

pustular eruption, often covering large body areas. This is referred to as bath mycosis. Treatment necessitates the discontinuance of the water bath or the wet dressing and the application of dusting powder, such as the one given in prescription 18, or painting liberally three times daily until cured with the lotion given in prescription 19.

ANIMAL PARASITES

The treatment of animal parasitic diseases offers a problem much less difficult. Here one is dealing with animal life on the skin surface or in the horny layer of the epidermis or on the underwear. In rare instances the parasite is to be found below the epidermis. The parasite either is accessible or can be made more accessible by solvents of the horny layer and it is readily destroyed by even small concentrations of the parasitocides. The primary consideration should therefore be to do no harm, since the remedies employed are, in high concentrations irritants, and also since the number of people who have a heightened susceptibility to these remedies is not inconsiderable.

As a group, the animal parasites account for from 8 to 10 per cent of patients encountered in clinic practice. The percentage in private practice is much smaller since this group of diseases occurs more commonly in the poorer classes, in people who are more subjected to crowding and people whose personal hygiene is both poor and apt to be neglected. There are only two diseases in this group which are of significance because of their frequency, namely, pediculosis and scabies.

PEDICULOSIS

Three kinds of lice are parasitic to man: the head louse, the body louse and the pubic louse.

Head lice, causing pediculosis capitis, are found in childhood but at times also affect the adult. The lice cause severe itching and scratching, which may give rise to secondary excoriations, impetiginized lesions, folliculitis and even abscess of the scalp. Secondary infection may be accompanied by swelling of the glands of the neck. A large number of ova attached by a chitinous membrane to the hair, are distributed throughout the scalp. The diagnosis is simple indeed.

The case with which the parasite can be destroyed is borne out by the method of treatment used at the Saint Louis Hospital in Paris in the severe cases in which the head teems with pediculi, namely, the application of a thick layer of petrolatum over the entire scalp which is then bandaged overnight. The parasites are destroyed by suffocation. Pediculi may be destroyed by the application of an aqueous solution of mercury bichloride 1:5000 or a 2 per cent betanaphthol ointment

or a 5 per cent sulfur ointment or a 10 per cent salicylic acid ointment. The last mentioned possesses the added advantage of loosening the ova (nits) and softening the crusts so often found in lousiness of the scalp. The nits are best removed with a fine comb dipped in hot vinegar which dissolves the chitinous membrane attaching the nit to the hair. The danger accompanying the use of the easily ignitable crude petroleum cap, which enjoys a certain modicum of popularity, should be sufficient to cast this form of treatment into the limbo of discarded procedures.

Body lice, causing pediculosis corporis inhabit the clothing coming into contact with the skin and are characteristically found in the seams of the under-clothing. Sterilization of the clothes and personal cleanliness will suffice to effect a cure.

Pubic lice, causing pediculosis pubis, are not confined to the pubic region but will be found also on the thighs and in the perianal region, buttocks, axillae, eyebrows, eyelids and beard. They will not live in the scalp. Mercurial ointment, almost a classic form of treatment is mentioned only to be condemned. The use of an ointment of such strength for the destruction of pediculi is unwarranted. The dermatitis and also the stomatitis to which it may give rise, even after a single application, is more serious and more annoying than is the pediculosis. Such strenuous measures are unnecessary. An ointment such as the one given in prescription 20 or the U. S. P. Ammoniated Mercury

PRESCRIPTION 20—*Ointment for Pediculosis Pubis*

	Gm or Cc
R Precipitated Sulfur	3 0
Betanaphthol	1 8
Wool Fat	5 0
Petrolatum q s.	ad 60 0

Ointment in one-half strength, is efficacious without the disadvantages obtaining from the use of the strong or mild mercurial ointment. Also to be recommended

PRESCRIPTION 21—*Peruvian Balsam*

	Gm or Cc
I. Peruvian Balsam	
Alcohol (60 per cent)	5a 30 0
Sig To be rubbed gently into affected parts morning and night	

PRESCRIPTION 22—*Mercury Bichloride Solution*

	Gm or Cc
R Mercury Bichloride	0 5
Glycerin q s.	ad 100 0

the prescriptions 21 and 22. The mercury bichloride solution is applied for three or four nights in succession and then less frequently, every three to seven days, for from two to three weeks.

The ova are removed with xylene or with hot vinegar, as mentioned under pediculosis capitis. A cure in this condition is not to be expected in less than a week, in those with a profuse growth of hair on the abdomen and chest, cure may be delayed two weeks or even longer. Daily and diligent application of remedies is essential. Shaving of the affected parts will hasten the cure, but the discomfort attendant on shaving the affected areas may be obviated by the conscientious application of the remedies.

Scabies is a contagious dermatosis caused by an acarus *Sarcoptes scabiei*, in which the female of the species burrows into the skin, within the horny layer usually at some favored site, depositing ova and excrement along this tunnel. The ova hatch in from four to six days and are ready to repeat the cycle. The male of the *Acarus* family lives on the skin surface and is easily disposed of.

The eruption is symmetrical and has a characteristic distribution affecting primarily the webs of the fingers, the flexor surfaces of the wrists, the elbows, the anterior axillary fold, the ankles and the buttocks, in women, the breasts and nipples, in men, the penis, and in children the palms and soles. Needless to say, the lesions may appear in other areas but the eruption is characteristically absent above the clavicular level. In the unhealthy the eruption is apt to be characteristic, severe, with numerous vesicles, with secondary scabietic eczema due to scratching and with secondary infected lesions. In the cleanly it may be so mild as to offer difficulty in diagnosis. However, the contagious character of the eruption, the nocturnal pruritus, and finally the demonstration of the acarus help in establishing the diagnosis even in these questionable cases.

Destruction of the parasites and ova will cure the itch. Sulfur is the time-honored remedy and the remedy of choice. The parasitocidal action of sulfur is, in all probability, due to the formation of hydrogen sulfide on the skin, which, even in low concentration, is fatal to animal life. The patient is instructed to take a warm bath and to wash thoroughly with soap and water for at least one-half hour. Sulfur ointment, U. S. P., one-half strength, is then massaged gently over the body below the clavicular level. Application of the salve, without bathing, is repeated on the two succeeding nights, and on the fourth night the patient is instructed to bathe again. During this course of treatment the same bed linen and underclothing are used. At the end of the course the linen and clothing are both changed. Sterilization of the underclothing and bed linen is essential. Recurrence is to be attributed to reinfection, in which both improper care of the clothing and the original source of contact play no small part. For obvious reasons, all members of a family who are infected are to be treated at the same time. The patient is to be observed again after a period of several days, and if he is not symptom free and if the physician is convinced that the pruritus is not due to irritation from sulfur, and also that the scratching is not due to habit alone, he is to undergo another course of treatment. Two courses of treatment properly carried out should be sufficient to cure scabies.

In the more severe type of case seen in clinic practice, stronger ointments are used. The addition of

PRESCRIPTION 23—Compound Ointment of Sulfur, N. F.

	Gm. or Cc.
R Precipitated Calcium Carbonate	10.0
Sublimed Sulfur	15.0
Juniper Tar	15.0
Soft Soap	30.0
Solid Petroxaline	30.0

PRESCRIPTION 24—Alkaline Ointment of Sulfur, N. F.

	Gm. or Cc.
R Flowers of Sulfur	20.0
Potassium Carbonate	10.0
Ointment base	to make 100.0

soaps and alkalis, such as potassium carbonate, makes for better penetrating power into the burrow. The best known of these are prescriptions 23 and 24.

Another convenient and effective method used in the treatment of scabies in children is the one advocated by Sherwell. Before retiring, the child's body is gently rubbed with flowers of sulfur and then the child is permitted to sleep in a bed that has been sprinkled with the flowers of sulfur. The duration of treatment is one week. Dermatitis from this form of treatment is rare.

There are many other remedies used in the treatment of scabies, but these will be mentioned only

briefly. Peruvian Balsam from 5 to 15 per cent in ointment form or mixed with equal parts of alcohol is useful. Styra, another balsamic, may also be used in ointment form or as in prescription 25.

PRESCRIPTION 25—Styra Ointment

	Gm. or Cc.
R Styra	50.0
Alcohol	
Linseed Oil	25.0

Betanaphthol may be substituted for sulfur in any of the foregoing ointments in 2 to 5 per cent concentration, but it is apt to produce the same toxic effects that are caused by phenol when used over large areas.

200 West Fifty-Ninth Street

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT
PAUL NICHOLAS LEECH, Secretary

REPORT ON THE PRESENT STATUS OF TETRACHLORETHYLENE

Tetrachlorethylene is an unsaturated halogenated aliphatic hydrocarbon with specific gravity of 1.60, a boiling point of 121°C and a chlorine content of 85.5 per cent. It has become an official drug by its admission to the new National Formulary. It is stated to contain not less than 99 per cent and not more than 99.5 per cent of CCl_2 —the remainder consisting of alcohol. It is claimed to be a useful agent in the treatment of hookworm infestation as evidenced by the many clinical as well as experimental reports which have appeared in medical literature.

Garrison,¹ writing on the use of tetrachlorethylene in the treatment of hookworm in children, noted the following percentage of infestations: 26 per cent (estimated)² of Southern school children, 15 per cent of a certain series of 5,000 hospital admissions, 22 per cent of the 121,388 specimens examined by nine state departments of health in 1930, 50 per cent of the individuals in a Mississippi CCC camp, and 51 per cent of certain groups of Mississippi school children.

Lamson, Brown and Ward³ reviewed 500 references to the treatment of hookworm and *Ascaris*, on which a total of 300 different anthelmintics were employed. They studied an additional 300 agents against *Ascaris* and pointed out that all agents in common use (except tetrachlorethylene and hexylresorcinol) were well known poisons.

The high efficiency of chloroform in the treatment of infestations led Hall to use carbon tetrachloride in animals and it was later used extensively in man. Hall and Shilling⁴ studied other related compounds including ethylene dichloride and tetrachlorethylene. They employed the latter agent in twenty-three infested dogs and found it to be an efficient anthelmintic. Christiansen and Lynch⁵ concluded from their comparative studies of tetrachlorethylene and hexylresorcinol in animals that although there was only mild fatty infiltration of the liver and no kidney involvement, there was (post mortem) spongy shriveled and inflamed intestines. They claimed that the heart and respiration were both depressed but they used 1.2 and 3 cc. of the drug in these dogs. Lamson and his co-workers did not class tetrachlorethylene with carbon tetrachloride because the guanidine content of the blood did not change as with the latter.⁶ This is especially advantageous in treating infested patients have calcium deficiency. Schlingman and Grubitz⁶

1 Garrison, H. F. Comparative Value of Tetrachlorethylene in Children. *South. M. J.* 27:24 (Jan.) 1934.
2 Stiles, C. W. Address before the Southern Medical Association, Nov. 14, 1933.
3 Lamson, P. D., Brown, H. W., and Ward, Charlotte B. Anthelmintics. *J. A. M. A.* 99:292 (July 23) 1932.
4 Hall, M. C., and Shilling, J. E. A New Anthelmintic. *Am. J. Trop. Hyg.* 5:229 (May) 1925.
5 Christiansen, B. V., and Lynch, H. J. Effect of Anthelmintics on the Host. *J. Tetrachlorethylene II. Hexylresorcinol I. Parasitology* 48:311 (July) 1933.
6 Schlingman and Grubitz. Toxicity of Tetrachlorethylene. *J. A. M. A.* 71:189 (Mar.) 1927.

found very slight changes, principally in the liver. Maplestone and Chopra⁷ found it much less toxic than carbon tetrachloride and concluded from their experiments that it caused no damage to the organs of otherwise healthy animals (cats) in therapeutic doses. Lamson and his co-workers⁸ pointed out that little if any [?] was absorbed from the dog's intestinal tract in the absence of fat. If fat was present, however, it produced hypnotic symptoms, even death.

Noting these experiments, Hall and Shillinger⁴ and Lamson and his co-workers⁸ were of the opinion that since it is less toxic than carbon tetrachloride, and as efficient as the latter, its clinical use would not be contraindicated.

Garrison¹ compared tetrachlorethylene with oil of chenopodium and carbon tetrachloride in 627 children and his results were much more satisfactory than with the latter two agents. Schapiro and Stoll⁹ found that 3 cc reduced the egg count 81 per cent and 2 cc reduced it 77 per cent, as compared with 47 per cent reduction using 15 cc of oil of chenopodium and 24 per cent with less than 1 cc of the oil. Smith¹⁰ used 1 cc. in 276 school children and claimed an effectiveness of 90.5 per cent.¹⁰ Garn, Roussel and Gonthier¹¹ used 3, 4 and 5 Gm (1 Gm at hourly intervals) doses on successive days in 371 treatments resulting in 332 expulsions, most of which occurred after one treatment. Maplestone and Mukerji¹² reported it not superior to carbon tetrachloride except that it might be less toxic. Later they¹³ found it satisfactory, in combination with oil of chenopodium and magnesium sulfate. In a series of fifty cases, using Lane's centrifuge method (considering ordinary counts unreliable), they reported thirty-one negative ten days after the first treatment and twelve more after a second treatment. Garrison¹ noted that negative stools were obtained in 49 per cent of the cases in the CCC camp mentioned after 2 cc. of tetrachlorethylene had been given. Kendrick¹⁴ concluded from his work that it was superior against *Ancylostoma* in doses of 3 cc (in fifty-nine cases) and 2 cc (in fifty cases). He further noted it inferior to 24 cc. of a 3 to 1 mixture with oil of chenopodium in thirty cases of *Necator* infestation. Soper¹⁵ had previously reported fifteen cases with similar but less favorable results against *Ancylostoma* and far less favorable against *Necator* in comparable work in which carbon tetrachloride was used for control. The same decreasing order of resistance against all these agents is reported by both authors.¹⁶ female *Ancylostoma*, male *Ancylostoma*, male *Necator*, female *Necator*.

Lamson⁸ noted that the use of the older remedies involved a possible risk of death, a fair chance of collapse, an acute nephritis from betanaphthol, disturbance of vision with santonin, deafness from oil of chenopodium, and necrosis of the liver with carbon tetrachloride. He and his co-workers⁸ felt that severe intoxications were much more frequent than reported. They were of the opinion that tetrachlorethylene differed from chloroform and carbon tetrachloride in causing no pathologic or functional change. They stated that they had been assured the product would not break down to phosgene (This factor caused some earlier workers to abandon its use).

Lambert¹⁷ reports 286,486 cases of hookworm disease treated with tetrachlorethylene or carbon tetrachloride either alone or in combination with oil of chenopodium. Early in the series

there were seven deaths—one from oil of chenopodium without purge and six after carbon tetrachloride. Over a period of four years he used tetrachlorethylene in 46,000 cases with no deaths and with fewer toxic symptoms than with other agents. Lamson⁸ felt that the lowered toxicity permitted the use of a less violent cathartic and suggested sodium sulfate in place of the magnesium sulfate. It has been reported¹³ that tetrachlorethylene could be given with alcohol and that its toxicity was not affected by alcohol but it would seem preferable to avoid the combination.

The toxic effects (reactions) consist of giddiness, vomiting and drowsiness,¹⁸ although these are supposedly not related to liver effects.¹⁸ The experimental occurrence of cardiac and respiratory depression has not been encountered clinically, no change in rate of either, although there was a slight lowering of blood pressure. Sharp¹⁹ felt that reactions were more frequent in children, while Garrison¹ had little difficulty with his young patients (they were confined to bed during the procedure).

Tetrachlorethylene has been used against other worms with little or no success except in the case of *Trichuris* infections.²⁰

Lambert¹⁷ (after treating 46,000 cases with tetrachlorethylene and over 200,000 cases with other agents) considers it the most satisfactory anthelmintic against hookworm disease. Lamson⁸ reported that it was just as good as any drug or combination of drugs against both *Necator* and *Ancylostoma*. Maplestone and Mukerji¹² considered it superior to carbon tetrachloride and safer than either the latter or oil of chenopodium. Garrison¹, after using it in children, considered it to be satisfactory, most economical, and the best anthelmintic against hookworm.

The Council authorized publication of the foregoing report on the present status of tetrachlorethylene.

In the 1937 edition of *New and Nonofficial Remedies* there will appear a description of tetrachlorethylene with a considered statement of actions and uses.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

POLLEN ANTIGENS-LEDERLE (See New and Nonofficial Remedies, 1936, p. 35)

The following additional products have been accepted:

Ash Pollen Antigen Lederle, Beech Pollen Antigen Lederle, Birch Pollen Antigen Lederle, Hickory Pollen Antigen Lederle, Poplar Pollen Antigen Lederle, Sycamore Pollen Antigen Lederle.

ANTIPNEUMOCOCCIC SERUM TYPES I AND II COMBINED (See New and Nonofficial Remedies, 1936, p. 374)

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Antipneumococcic Serum, Types I and II Combined Mulford—A serum obtained from horses immunized with type I and type II pneumococci and standardized by animal potency tests. It is marketed in packages of one 50 cc. double end vial and in packages of one vial for intravenous injection.

Dosage—From 50 to 100 cc. given intravenously and repeated every six to eight hours until the temperature falls and beneficial effects are evident.

Antipneumococcic Serum, Concentrated (Pneumococcus Antibody Globulin Types I and II) Mulford—A serum obtained by immunizing horses with intravenous injections of type I and type II pneumococci. It is subjected to the usual sterility and safety tests by injection into white mice and guinea pigs. Standardization is effected on the basis both of the mouse protection test and by a specific polysaccharide precipitation test devised by Zozaya, Boyer and Clark (*J. Exper. Med.* October 1930, p. 471). The potency of the product is expressed in terms of the unit described by Felton (*J. Infect. Dis.* September 1925, p. 199; October 1925, p. 309; *THE JOURNAL*, June 14, 1930, p. 1893). Marketed in packages of one 10 cc. syringe containing 10,000 units and in packages of one 20 cc. syringe containing 20,000 units.

Dosage—Initial dose, 10,000 units followed in one hour by a second dose of 20,000 units; the second dose is repeated at intervals of from four to eight hours until the temperature falls and beneficial effects are evident.

18. Lamson, Brown and Ward.⁸ Maplestone and Mukerji.¹²
19. Sharp, E. A. Relation of Toxicity to Dosage of Tetrachlorethylene, *J. Trop. Med.* 33: 336 (Nov. 15) 1930.
20. Hall and Shillinger.⁴ Maplestone and Chopra.⁷ Garn, Roussel and Gonthier.¹¹

7. Maplestone, P. A. and Chopra, R. N. Toxicity of Tetrachlorethylene to Cats, *Indian M. Gaz.* 68: 554 (Oct.) 1933.

8. Lamson, P. D., Robbins, B. H. and Ward, Charlotte B. Pharmacology and Toxicology of Tetrachlorethylene, *Am. J. Hyg.* 9: 430 (March) 1929. Symposium: Tetrachlorethylene in Hookworm Infestations, *Internat. M. Digest* 16: 247 (April) 1930.

9. Schapiro, L. and Stoll, N. R. Preliminary Note on Anthelmintic Value of Tetrachlorethylene, *Am. J. Trop. Med.* 7: 193 (May) 1927.

10. Smith, M. E. Tetrachlorethylene in the Treatment of Hookworm, *J. M. A. State of Alabama* 2: 75 (Aug.) 1932.

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SATURDAY, OCTOBER 3, 1936

MEDICAL TRUANTS

After years of arduous preparation for the practice of medicine, a physician occasionally finds that his principal talent or interest lies elsewhere and he wanders off into other fields of attainment. This has been true throughout the history of medicine. Some illustrious medical truants have thus been donated to science, to literature, to law and to the state. The late Lord Moynihan¹ cited in his recent Linacre lecture some of the better known medical truants—Copernicus graduated in medicine at Cracow, but he is remembered today as the professor of mathematics who published a treatise on the Revolution of the Planets Around the Sun in 1543. Thomas Linacre himself, the first president of the Royal College of Physicians, and physician to a king, was more highly esteemed as a scholar than as a physician. The great philosopher John Locke graduated in medicine at Oxford and actually engaged in medical practice. His later years were devoted to philosophy and it was he who equipped the Whigs with their political philosophy for the next century. Berzelius, a great chemist, was professor of medicine at Stockholm. John Woodward, who created the first geological museum, received his medical degree from Cambridge and then distinguished himself as a geologist. Malpighi was physician to the Pope, yet he turned to botany and became a pioneer in vegetable microscopic anatomy. The humble doctor's office seems far removed from the Vatican, and yet Dr. Petrus Hispanus actually became Pope John XXI, his pontificate extending from Sept. 8, 1276 to May 20, 1277, when he was killed by a roof collapsing in his palace.²

The great botanist Linnaeus held the degree of doctor of medicine from Uppsala. Sir Thomas Hooker graduated in medicine at Glasgow and then went as a physician with the Ross expedition to the antarctic where he studied the flora so intently that six volumes

were required to present his studies. Darwin first propounded his theory of natural selection to Hooker.

Some physicians have given to politics the energy which they first intended for the practice of medicine. The romantic Georges Clemenceau qualified in medicine in 1865, then spent much of his life in politics. He practiced medicine in New York and later in Paris as a specialist in skin diseases, going into politics he became mayor of Montmartre, a member of the chamber of deputies, a senator and finally the most masterful prime minister of France, serving during the hectic World War to earn the title of savior of his country. The first president of the Chinese Republic Sun-Yat-Sen, graduated from the College of Medicine in Hong-Kong in 1892. Joseph Warren of Massachusetts was a popular doctor of medicine, who eventually went into politics, he, with Samuel Adams, did much to arouse the spirit of liberty in Massachusetts. It was Dr. Joseph Warren who sent Paul Revere on his famous ride through Arlington, Concord and Lexington, and when news of battle came he rode to the scene of action and later was killed at the battle of Bunker Hill. Leonard Wood, who graduated at Harvard Medical School in 1884, entered the army medical corps and finally became one of the greatest colonial administrators America has produced.

John Keats is a perfect example of the medical truant. His interest was elsewhere even during his student days, when he wrote to a friend:

The other day during the lecture there came a sunbeam into the room, and with it a whole troop of creatures floating in the ray, and I was off with them to Oberon and fairyland.

Keats became apprenticed to a surgeon and then, though poor, abandoned medicine for literature. Sir Ronald Ross was a poet but his abiding fame remains in his monumental work on the transmission of malaria. S. Weir Mitchell, the leading American neurologist of his time, has a place in the world of letters near Goldsmith and Holmes, not far below Scott and Lamb.³ The tone of his books, said Wister, "is a lesson and a tonic for an age that is sick and weak with literary perversities." Mitchell was the first to describe causalgia, erythromelalgia and postparalytic chorea and, with William Thompson, was the first to emphasize the importance of evestram as the cause of headache. When the beloved Dr. Oliver Wendell Holmes was appointed professor of anatomy and physiology at Harvard University, he had so many duties that he said "I occupy not a chair but a whole settee." Holmes did not desert medicine, he made medicine the companion of literature. Lord Moynihan said of his work on puerperal fever published in 1843 that it is "one of the greatest essays ever written in the history of medicine." The German poet Schiller was a graduate in medicine. Goethe, also a great German poet and a biologist, was one of the pioneers of evolu-

¹ Moynihan, Lord. Medical Truants. *Lancet* 1, 12, 4 (May 10), 1936.

² Medical Truants. *Brit. M. J.* 1, 943 (May 9), 1936.

³ Thompson, W. M. Veritable Men of Medicine. *Welfare Magazine* 18, 502 (Mar.) 1927.

⁴ Garrison, Fielding H. An Introduction to the History of Medicine. ed. 4. Philadelphia: W. B. Saunders Company, 1929.

tion He was the first to use the term 'morphology', and he discovered the intermaxillary bone Goldsmith, the beloved poet, was a medical graduate, although some writers doubt his right to describe himself as doctor Goldsmith was for a time physician to the poor at Bankside He obtained a medical appointment with the East India Company, which later revoked it He presented himself for examination for hospital physician but again was rejected Turning then to literature he found immortality, and his *Vicar of Wakefield* will be read as long as the language lasts

Edward Jenner, the discoverer of vaccination, was in a minor sense a poet David Livingstone graduated in medicine, then almost immediately embarked to explore Africa Hermann von Helmholtz, the mathematical physicist, was educated to be a surgeon in the Prussian army but spent much of his life as professor of anatomy and physiology and of physics He was the author of the great *Handbook of Physiological Optics*, which Garrison says is a permanent classic He invented the ophthalmoscope, the ophthalmometer and the phacoscope After assuming the chair of physics at the University of Berlin in 1871 he devoted the remainder of his life to the field in which his true genius lay and in which he was equaled, in modern times, only by such men as Lord Kelvin and Clerk Maxwell It was in Helmholtz's laboratory that Hertz discovered the hertzian waves, which later led to wireless telegraphy Helmholtz, however, never forgot that he was a physician "Medicine," he said, with pride, 'was once the intellectual home in which I grew up, and even the emigrant best understands and is best understood by his native land' Helmholtz was also a great lover of music and the most prominent of many German scientists of his time who followed music He not only performed but was the founder⁵ of musical esthetics as a science and the author of the most exhaustive treatise on the physical basis of tonal sensations that has ever been achieved His great work *Tonempfindungen* was published in 1863 Theodore Billroth, the pioneer of visceral surgery and the greatest German surgeon in his time, was the grandson of a famous soprano Beneath his calm exterior was the musician and poet He carried on a lifelong friendship, indeed a sort of musical brotherhood, with the great composer Brahms, the central figure in the famous musical evenings at Billroth's Vienna home Although John Hunter, a great Scotch surgeon, had no liking for music, his wife, Anne Hunter, was a patron of music and wrote the words for Hayden's *Creation*

Lord Moynihan sketched the careers of other medical truants, including Galileo and Sir Thomas Browne, among artists there was Sir Francis Seymour Haden, who was vice president of the Obstetrical Society and founder and first president of the Royal Society of Painter-Etchers Sir Francis produced 250 works of

his own, it is said that as a physician he often made rounds with an etching plate in his pocket The list is long, including also actors, sportsmen and sculptors, and the evolutionary process is still at work It has been especially revealed recently in the annual exhibits of hobbies and the avocations enjoyed by hundreds of physicians

DISTRIBUTION OF CEVITAMIC ACID IN TISSUES

Progress in many branches of science passes through rather definite steps The first period is usually characterized by qualitative discoveries and advances of a qualitative nature This is followed frequently by a period more quantitative in its scope An excellent example of this general tendency is presented by the case of vitamin C The earliest work dealt with the existence of such a substance and its qualitative presence or absence in different foods Subsequently, with the isolation, determination of the chemical structure synthesis, and development of highly sensitive and rather specific methods for its determination, the problem has changed abruptly into a distinctly quantitative phase Here again is seen an orderly progression of study The earlier investigations were of a macroquantitative type, whereas more recent studies have tended to be microquantitative in character Likewise, in the case of the distribution of cevitic acid in tissues, the emphasis has shifted in turn from tissues in general to specific organs and, in the most recent work to a study of the vitamin content of individual cells

Several years ago, experimental studies demonstrated that practically all tissues of the body contain some vitamin C but that in general the largest amount is present in glandular tissue and the least in muscle tissue and stored fat¹ Subsequently it was found that different organs vary considerably in their content of cevitic acid The adrenal, pituitary, corpus luteum and thymus contain the largest amount of the vitamin whereas the pancreas, liver, spleen, testis, ovary, brain thyroid, submaxillary gland and intestinal mucosa contain successively less Somewhat smaller amounts are present in the kidney, lung and heart Similar variations in the vitamin C content of different human organs obtained at necropsy have been reported¹

In a recent series of investigations² the question of the distribution of cevitic acid within certain organs has been studied in an ingenious manner Whole glands—adrenal, pituitary, ovary and thymus—were removed from freshly killed cattle and frozen at -5°C to pre-

¹ King C G Vitamin C Ascorbic Acid *Physiol Rev* 16 234 (April) 1936

² Glick David and Biskind G R The Histochemistry of the Adrenal Gland I The Quantitative Distribution of Vitamin C *J Biol Chem* 110 1 (June) 1935 The Histochemistry of the Hypophysis Cerebri The Quantitative Distribution of Vitamin C *ibid* 110: 583 (Aug) 1935 Studies in Histochemistry V The Vitamin C Concentration of the Corpus Luteum with Reference to the Stage of the Estrous Cycle and Pregnancy *ibid* 113: 27 (Feb) 1936 Studies in Histochemistry VII The Concentration of Vitamin C in the Thymus in Relation to Its Histological Changes at Different Stages of Development and Regression *ibid* 114 1 (May) 1936

⁵ Weinhold Ernest Medical Men Who Have Attained Fame in Other Fields of Endeavor *Ann Int Med* 3 1046 (April) 1930

vent loss of the vitamin. A small cylindric sample of the frozen tissue was then removed and the specimen was mounted on a freezing microtome and sliced into thin sections, some of which were periodically taken for analysis by a microchemical method, sensitive to ± 0.0001 mg of the vitamin. This procedure permitted a study of restricted portions of the gland and indeed, in certain instances, of the different types of cells themselves. It was observed that the vitamin C content of the tissue taken from the fascicular zone of the adrenal cortex was nearly twice that of the same-sized slices taken from the medulla. In order to determine whether the difference was actual or only apparent because of the presence in the medulla of structures, such as nerves and vascular spaces, containing only small amounts of the vitamin, cell counts were made in the various areas and from these values the cevitamic acid content of the individual parenchymal cells was estimated. The actual amount of the vitamin present in the relatively small fascicular cortical cell was still significantly greater than that present in the larger medullary cell. A similar type of study of the pituitary demonstrated that an exceedingly high concentration of vitamin C was present in the pars intermedia. Indeed, the concentration of the vitamin in this portion of the pituitary, according to the authors, is the highest of any tissue yet recorded, being some 15 times greater than that in the cells of either the pars distalis of the pituitary or the adrenal cortex.

The concentration of cevitamic acid in the corpus luteum and the thymus was likewise determined by the same method and an attempt was made to detect possible changes with age and physiologic activity. The quantity present in the corpus luteum was found to be at a maximum in the fully mature organ, a decrease occurring during the period of involution and atrophy. It is of interest to note that the fluctuations in the vitamin content of the corpus luteum parallel to a striking degree the changes in the amount of the luteal hormone, progesterone, present in the gland. There is some indication, it is pointed out, that this relationship may be more than a casual one. In the case of the thymus, the amount of cevitamic acid in the gland of the calf or the fetus exceeds that present in the glands of cows and bulls. However, the apparent decrease with age was shown to be due to the displacement of active glandular tissue by fat and connective tissue during involution. There was no significant decrease in the concentration of the vitamin in the glandular cells themselves.

Searching studies of this type have more than academic significance. Not only will they yield knowledge of fundamental value in elucidating the question of the function of vitamin C in the animal organism, but now that the chemical properties of cevitamic acid have become known such investigations will point out more clearly the specific function of the organ or cell in question.

SURGICAL EXAMINATIONS AND THE INTERNATIONAL COLLEGE OF SURGEONS

Announcements, now widely circulated to the American medical press, indicate that the International College of Surgeons, discussed in our editorial columns¹ on June 20, is about to conduct examinations for membership and fellowship for those who apply and indicate their willingness to pay \$250 for the purpose. Thus it now becomes possible for a young man who wishes to find out whether or not he is a surgeon to obtain the information from three or more sources. He may submit his credentials and take the examination afforded by the American College of Surgeons, he may undertake a similar process in relationship to the International College of Surgeons, or he may no doubt within the near future apply for examination and certification by the Certifying Board in Surgery, which is in process of formation.

Subsequent to the publication of the current comment already referred to, the International College of Surgeons made available a roster of state regents, specialty regents and fellows, who apparently accepted the nominations given them with the understanding that they would not be requested to invest financially in their honors. There are indications that a considerable number of these "lead horses" subsequently became aware of the extraordinary nature of the organization by which they had been honored and intimated a desire to relinquish the special recognition which had been conferred on them. No doubt they should be free from condemnation in view of the fact that many American and foreign leaders whose names were associated with the prospectus were persons of high reputation and distinction in American and foreign surgery, whose names in themselves should be warrant of scientific merit. Nevertheless, some others apparently felt the new organization a suitable substitute specially designed for the benefit of those who have failed to meet the requirements of the well established International Society of Surgery. In the general news columns of this issue of THE JOURNAL appears an announcement of the International Society of Surgery with regard to its next meeting in Vienna in September 1938.

What are the difficulties primarily concerned in the promotion of the new International College of Surgeons? As was pointed out in our original current comment, there seems to be no good evidence that such a body will meet any need not already provided for by established organizations. The proposals for an international museum of surgery in Geneva and for international reciprocity, the committee to restrict the publication of unestablished surgical material, the building to be erected and the higher degrees are, to say the least, grandiloquent conceptions. The automatic selection of 300 American surgeons by a self-constituted

¹ The International College of Surgeons—Why? Current Comment, J. A. M. A. 100: 2162 (June 20) 1935.

body is in itself no guaranty of competence in those who will pay \$250 for the examination. The International Society of Surgery during thirty-one years has already selected 125 leading American surgeons for 150 places available to American surgeons of established prestige. Is it to be considered that any considerable number of surgeons will care to avail themselves of membership, fellowship, mastership or any of the other distinctions to be conferred by both these organizations? Finally, what can the International College of Surgeons have to offer beyond the prestige already available through the certificate of fellowship in the American College of Surgeons or the certificate to be made available by the new Certifying Board?

To the average American physician it may appear that *THE JOURNAL* is concerning itself unduly in this matter. The problem of multiple medical organizations in various fields is one that has concerned leaders in American medicine for many years. Readers will recall previous editorials in relationship to the American Medical Editors' and Authors' Association. Certainly it is within the province of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* to make American physicians aware of the conditions surrounding any effort or organization which makes a distinct appeal for the funds of American physicians. Those who have contemplated application to the International College of Surgeons for one of the examinations to be offered in various portions of the United States and Canada under the auspices of local regents may well consider the value of the return which they are likely to receive for their investment.

Current Comment

DISTRIBUTION AND HOSTS OF THE HUMAN FLEA

With the recent recognition of sylvatic plague in Montana and Oregon, data on the distribution and host relationships of fleas in these states, particularly those species known to attack man, assume a new and important interest. For this reason, records which show the association of the human flea *Pulex irritans* L. with plague-susceptible native rodents, wild carnivores, game animals and household pets within these states are of particular value. Data of this type have been recently presented by Jellison and Kohls¹ of the United States Public Health Service. The records show particularly that *Pulex irritans* is well established in many parts of Montana. In the search for possible hosts it has been possible definitely to identify *Pulex irritans* obtained from prairie dogs, domestic dogs, coyotes (*Canis latrans*) and deer (*Odocoileus* Sp.). Evidently this flea may occur frequently on coyotes in other Western states, as collections made from this host in Colorado, in Oregon and in California have contained specimens of *Pulex irritans*. These preliminary observations indi-

cate that, in view of the diverse host data and the number of locality records that have been obtained in a relatively brief period, *Pulex irritans* has been a well established species in these regions for some time. Further field studies will undoubtedly increase the list of host animals as well as add extensively to the data regarding additional details of the life history of this parasite.

Medical Economics

THE STUDY OF CONSUMER PURCHASES

A New Survey of Family Expenditures

A new study of consumer purchases now in progress is planned to provide facts concerning medical costs free from propaganda. It is the most comprehensive survey ever made of American family expenditures. It is to include 52,000 families at all income levels and in all occupations.

The actual fact gathering has been divided between two federal government organizations. The U. S. Bureau of Labor Statistics is conducting the survey in urban centers and the U. S. Bureau of Home Economics is surveying agricultural areas. Plans for the study were formulated by a committee of representative economists in cooperation with the National Resources Committee. They follow the lines proposed by the Social Science Research Council in 1929 and suggestions made by the Chamber of Commerce of the United States in 1932.

As a result of this study, it is said, the medical profession will be able to learn the relation of family expenditures for medical care to expenditures for other specific goods and services, how this relationship varies with annual incomes ranging from \$250 to \$10,000 a year and over, how the occupation of the principal wage earner, the size of the family and the amount of the income influence the family's selection among the various types of medical care, how expenditures differ among rural and urban families, whether an urban family with a rural background is more likely to turn to specialists than a city-bred family, or whether the number of members in the family and the amount of the income play a more important part in the selection of medical services.

The detailed information which the 52,000 families are giving will not be lumped together in a mythical "average." The data are being analyzed by geographic areas for thirteen income groups, eleven types of family composition and seven occupational classifications (such as wage earners, salaried and independent businesses and professions, and retired persons).

This should make it possible to learn who calls on the services of physicians, dentists, ophthalmologists and other specialists, who visits clinics, how much money families in each of these classifications are spending for hospitalization, private nurses and visiting nurses, and what their expenditures are for medicines and drugs, medical appliances and supplies, eye glasses, and health and accident insurance.

These facts will be presented in relation to other family expenditures for food, clothing, shelter, household furnishings and equipment, education, recreation, travel, tobacco, reading, gifts, automobiles and personal care. In addition, changes in family assets and liabilities during the year will be analyzed, so it will be possible to learn the relation between expenditures for medical care and family savings or debts.

Organizations of manufacturers, retailers, advertising agencies and newspapers have shown great interest in the study because of its significance as a comprehensive market research survey. Obviously it will be equally significant for the medical profession in attacking the problems of medical economics and planning for the education of specialists and the location of hospitals. It provides the kind of accurate and objective data needed as the basis for future professional policies.

Such a study as this cannot be truly representative or of maximum usefulness to all groups unless individuals in all groups cooperate. This fact has been recognized by all who have understood the purposes of the study. The economists who planned the study estimated that about 15 per cent of the persons concerned would be unable or unwilling to participate in completion of the short interviews. Instead, the percentage of

¹ Jellison, W. L. and Kohls, G. M. Pub. Health Rep. 51: 842 (June 26) 1936.

'refusals' has averaged 29 per cent. For the longer interview the 'refusals' have averaged 11.5 per cent instead of the 25 per cent estimated.

The selected families of wage earners, retired persons, salaried and independent business men and members of various professions are giving information that will be of great value to the medical profession. The departments involved request the medical profession for similar cooperation. The ultimate usefulness of the study depends of course on the cooperation of the families in each business and professional group and on that of the medical profession.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Deaths from Poliomyelitis—One death reported during the week ended September 25 brings the total number of deaths from infantile paralysis in the Alabama outbreak to twenty-six. For several weeks the total has remained at twenty-five. The total number of cases reported during the period January 1 to September 25 is 354, an increase of eight cases since the preceding report. For the period January 1-September 18 there were 346 cases. For the period ended September 11 335 cases were recorded. The incidence continues to be heaviest in Jefferson, Lauderdale, Morgan, Franklin, Limestone and Cullman counties, with sporadic cases appearing throughout the state.

CALIFORNIA

Health at San Diego—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of thirty-seven million, for the week ended September 19, indicate that the highest mortality rate (166) appears for San Diego and the rate for the group of cities as a whole, 10. The mortality rate for San Diego for the corresponding period last year was 135 and for the group of cities, 10.3. The annual rate for eighty-six cities for the thirty-eight weeks of 1936 is 12.3, as against a rate of 11.5 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

State Association News—The public health institutes sponsored by the California Medical Association will be conducted in Monterey, October 7-11, San Francisco, October 14-17. The first one opened in Santa Barbara, October 2, to continue to the twenty-fourth. The November itinerary will cover the San Joaquin Valley. Visualization exhibits, which were part of the display in the Hall of Medical Science of the San Diego Exposition, will be shown in connection with the institutes. Drs. Edward M. Pallette, Los Angeles, Howard Morrow, San Francisco, and Frederick C. Warnshuis, San Francisco, respectively president, president-elect and secretary of the state association, will inaugurate their annual visits to county societies, October 7-10, when five county units will be visited in the upper Sacramento Valley. Not one of the twenty-two state initiatives appearing on the November ballot relate to medicine, medical care, insurance or health legislation.

COLORADO

Personal—Colorado College recently conferred the honorary degree of doctor of science on Dr. Gerald B. Webb, Colorado Springs.

Society News—Dr. Moses Paulson, Baltimore, addressed the Denver Society of Internal Medicine, August 17, on "Newer Aspects of Gallbladder Disease, Regional Ileitis and Ulcerative Colitis."—At a meeting of the Medical Society of the City and County of Denver, September 1, Drs. Joseph J. Reilly and Clifford L. Wilmoth, both of Denver, spoke on "Myasthenia Gravis" and "Inginal Hernia" respectively.—At a meeting of the Northeast Colorado Medical Society in Sterling, September 4, Dr. Vera Heimlich Jones, Denver, discussed the state public health program.—Dr. John C. Pounden, Cedaredge, addressed the Delta County Medical Society, August 28, on "Health Insurance in England."

DELAWARE

State Medical Meeting at Rehoboth, October 12-14—The Medical Society of Delaware will hold its annual convention in Rehoboth, October 12-14, with headquarters at the Belhaven Hotel, under the presidency of Dr. Joseph B. Waples Jr., Georgetown. Speakers will include:

Dr. William F. Bonner, Wilmington, Bronchiectasis.
Dr. Ervin L. Stambaugh, Lewes, Acute Appendicitis.
Dr. Arthur C. Jost, Dover, Diphtheria Immunization in Children.
Dr. John W. Burke, Washington, D. C., Facts, Fads and Fancies of Ophthalmology.
Dr. Thomas Grier Miller, Philadelphia, Diagnosis and Management of Gallbladder Disease.
Dr. Bartholomew M. Allen, Wilmington, Results of Gallbladder Examinations by Varying X-Ray Technique.
Dr. Thaddeus L. Montgomery, Philadelphia, Obstetric Anesthesia and Analgesia: Its Effect on the Third Stage of Labor.
Dr. Ira Burns, Wilmington, Recent Advances in Radiotherapy.
Dr. Lawrence J. Rigney, Wilmington, Diagnostic Features of Some Gastro-Intestinal Conditions.

At the meeting of the women's auxiliary, October 14, Miss Etta Wilson of the Delaware Children's Association will be guest speaker.

DISTRICT OF COLUMBIA

Dr. Boone Honored—Dr. Joel T. Boone, commander of the naval hospital, San Diego, Calif., has been awarded the Legion of Honor Medal, the highest award of the French government for extraordinary valor and courage during the World War. Dr. Boone, who was White House physician to Presidents Harding, Coolidge for a part of his term, and Hoover from 1929 to 1933, has been a naval medical officer since 1914. Dr. Boone has been awarded the Congressional Medal of Honor and the Distinguished Service Cross from the United States.

GEORGIA

Society News—At a meeting of the Fulton County Medical Society in Atlanta, September 17, Dr. James G. McDanel, Atlanta, read a paper entitled "A Comparative Study of Syphilis and Nonsyphilis on Fulton County Relief Rolls."—Dr. Kennon C. Walden, Waycross, addressed the Ware County Medical Society in Waycross, August 5, on diseases of the gallbladder.—At a meeting of the Coffee County Medical Society in Douglas, August 25, Dr. Alton M. Johnson, Valdosta, spoke on "Pylorospasm in Infancy."—Speakers before the Fourth District Medical Society at Warm Springs, August 10, included Drs. Arthur Neal Owens, New Orleans, on "Principles of Plastic Surgery as Applied to the Immediate Handling of Accidents", Wilmer Baker, New Orleans, "Handling of Accidents Occurring During the Administration of Anesthesia", Launcelot Minor Blackford, Atlanta, "Cardiac Pain", and Frank K. Boland, Atlanta, "Immediate Care of Fractures."—Dr. Loren Gary, Jr., Shellman, addressed the Randolph County Medical Society in Cuthbert, September 3, on the diagnosis and treatment of early syphilis.

ILLINOIS

Society News—The McDonough County Medical Society was addressed at Macomb, September 24, by Drs. William I. Pickett, Chicago, on thyroid surgery, Joseph E. F. Lybe, Chicago, hematuria, and Robert S. Berghoff, Chicago, diseases of the heart. Dr. Berghoff also conducted a heart clinic.—Dr. Margarete M. H. Kunde, Chicago, discussed endocrine therapy before the Iroquois County Medical Society at Watseka, September 24.—At a meeting of the DuPage County Medical Society, September 23, Dr. Max Thorek, Chicago, discussed "Photography as a Doctor's Hobby."—The Hancock County Medical Society was addressed, September 14, by Dr. Charles P. Blair, Monmouth, on "Fractures of the Spine" and Harold M. Camp, Monmouth, "The County Medical Society and the Community."

Chicago

Lectures on Psychoanalysis—Among other lectures and seminars, the Institute for Psychoanalysis offers the following during the first quarter of 1936-1937:

Drs. Franz G. Alexander and Thomas M. French, "Psychoanalytic Interpretation of Psychotic Cases."
Dr. Helen Vincent McLean, "Application of Psychoanalysis to Literature."
Drs. Catherine C. L. Bacon and Leon J. Saul, "Case Seminar for Psychiatric Social Workers."

Branch Meetings—At a meeting of the Englewood branch of the Chicago Medical Society, October 6, Dr. Roscoe G. Leland, director, Bureau of Medical Economics, American Medical Association, will speak on medical economics and Dr. Olin West, Secretary of the Association, will open the discussion. Dr. Emil Novak, Baltimore, addressed the Ave Plaines branch, September 25, on "Cause and Treatment of Functional Uterine Prolapse."

IOWA

Neuropsychiatric Meeting—The fifteenth annual convention of the Central Neuropsychiatric Association will be held in Iowa City, October 9-10. Scientific sessions will be held in the medical amphitheater of the University Hospital, with headquarters at the Jefferson Hotel. Speakers, all of Iowa City except Dr. Doolittle, will include

Dr. William L. Woods, Qualitative Analysis of Deterioration in Schizophrenia and Organic Psychoses
Dr. William Malamud, Psychasthenia
Dr. Erich Lindemann, Pharmacodynamic Studies in Relation to Neurophysiology and Psychopathology
Dr. Stephen Weiss, Studies in Equilibrium Reaction
Lee E. Travis, Ph.D., Berger Brain Rhythm* in Neuropsychiatric Cases
Emil Witschi, Ph.D., Hypophyseal Tumors Caused by Ovarian Hyperfunction
Dr. Charles G. Barer, Torula Infection of Central Nervous System
Drs. Harold W. Lovell and Harold D. Kerr, Encephalography in Schizophrenia
Prof. Rollin M. Perkins, S.J.D., Legal Aspects of Neuropsychiatry
Dr. Russell C. Doolittle, Des Moines, The Scope of the Private Sanatorium
Dr. Adolph L. Sah*, Dietary Factors in Polyneuritis
Dr. Olan R. Hyndman, Neurosurgical Cases of Special Neurologic Interest

The annual banquet will be held Friday evening with Dr. John F. Fulton, Yale University, New Haven, Conn., as the guest speaker. His subject will be "Autonomic Function Controlled by the Cerebral Cortex."

MAINE

Society News—At a meeting of the Hancock County Medical Society in Bar Harbor, August 25, Drs. Fritz B. Talbot, Boston, and Martin H. Fischer, Cincinnati, discussed 'Benefits of Water in Infancy' and 'Nephritis' respectively.—Dr. Charles Hendee Smith, New York, addressed the Somerset County Medical Society in Lakewood, August 7, among others, on infant feeding.—The Washington County Medical Society was addressed in Calais August 21, by Prof. Francis G. Benedict, Boston, on "Physiology of the Elephant," and Drs. Russell J. Collins, East St. John, N. B., and George F. Skinner, St. John, N. B., on medical and surgical treatment of tuberculosis, respectively.

Annual Fall Clinical Session—The fourth annual fall clinical session of the Maine Medical Association will be held in Waterville, October 15-16, with headquarters at the Elmwood Hotel. The clinical demonstration and conferences will be held during the mornings and afternoons of both days at the Central Maine Sanatorium, Fairfield, the Elm City Hospital, the Sisters' Hospital and Thayer Hospital. Each day will be divided into four periods, with eight clinics to each period. Thursday evening the Kennebec County Medical Association will hold its regular monthly meeting, the program will consist of a panel discussion on poliomyelitis with Drs. John A. Kolmer, Philadelphia, Josephine B. Neal, New York, and William Lloyd Aycock and Arthur T. Legg, Boston, as the speakers. The program Friday evening will be under the auspices of the committee on medical economics of the Maine Medical Association.

MASSACHUSETTS

Ether Day—Dr. Paul Dudley White, assistant professor of medicine, Harvard Medical School, will deliver the principal address at the observance of Ether Day at Massachusetts General Hospital, October 16. A scientific program will follow a buffet luncheon.

Chair in Legal Medicine Named for Dr. Magrath—The George Burgess Magrath Endowment for Legal Medicine will be established at Harvard Medical School, Boston, with a gift of \$250,000 by Mrs. Frances Glessner Lee of Chicago and Littleton, N. H., according to the New York Times. The gift commemorates her late brother, John G. M. Glessner, and his classmate at Harvard in 1894, Dr. George Burgess Magrath, medical examiner of Suffolk County since 1907. In that year Dr. Magrath became instructor in legal medicine, a position he held until 1931, when he was named professor. He is 66 years of age.

MINNESOTA

Society News—Dr. John H. J. Upham, Columbus, President-Elect, American Medical Association, discussed medical economics at the Mayo Clinic, Rochester, August 21.—Edgar Allen, Ph.D., professor of anatomy, Yale University School of Medicine, New Haven, addressed a special staff meeting of the Mayo Clinic, Rochester, September 10 on 'Hormones in Relation to the Development of Malignant Disease' and Howard B. Anderson, Sc.D., biologist, U. S. Public

Health Service 'Carcinogenetic Substances'. Others on the program included Drs. Warren H. Lewis, department of embryology, Carnegie Institution of Washington, and Henri Coutard, chief, department of x-ray therapy for cancer, Radium Institute of the University of Paris.

Naturopath Sentenced to Prison for Abortion—George R. Viger, Minneapolis, pleaded guilty in the district court of Ramsey County, September 15, to performing an abortion and was sentenced to a term of not to exceed four years in the state prison, according to the state medical board. Viger was arrested August 7, following the death of a 27 year old woman at Ancker Hospital, St. Paul. Prior to 1931 Viger maintained an office in the Bremer Arcade in St. Paul, representing himself as a naturopathic physician. He was arrested on a charge of practicing healing without a basic science certificate and pleaded guilty, Dec. 10, 1930. He was sentenced to pay a fine of \$200 and to serve a year in the St. Paul workhouse. The fine was paid and the sentence suspended on condition that he refrain from practicing healing. He closed his office after informing the court that he was moving to Texas. He did not leave the state and at the time of his last arrest was found to be living at a Minneapolis hotel.

MISSISSIPPI

Society News—Speakers before the Northeast Mississippi Thirteen Counties Medical Society at Amory, September 15 included Drs. Robert A. Strong, New Orleans, on "Nutritional Requirements in Infancy", Wade H. Sutherland, Booneville, 'Tuberculosis a Surgical Disease', Harvey F. Garrison, Jackson, 'Immunization', Richard A. Street Jr., Vicksburg, 'Suprarenal Cortex Hormone', and Stanley A. Hill, Corinth, 'Diagnosis of Uterine Hemorrhage'.—Dr. Hiram W. Kostmayer, New Orleans, addressed the Central Medical Society, September 1 on 'Endocrines in Gynecology'.—At a special session of the state legislature recently, an appropriation of \$36,000 was approved to continue the two year medical school at the University of Mississippi.

Clinics for Crippled Children—The crippled children's service of the state vocational board, cooperating with the state board of health, has arranged a series of clinics to care for children in Mississippi crippled by infantile paralysis since June 1. The first clinic was held, September 16, in Iuka for patients in Tishomingo County; the second at Corinth, September 18, for patients in Alcorn, Tippah and Prentiss counties; the third at Columbus, September 24, at Tupelo, September 26. A clinic is scheduled for Clarksdale, October 3. Scattered cases in central and southern Mississippi will be cared for early in October. These clinics are purely to apply braces, splints and such apparatus to prevent as much deformity as possible and minimize the amount of operating needed later to give the children useful limbs. Since the last legislature did not make the necessary appropriation for matching federal funds for crippled children's service, an appeal was made to Dr. William DeKleene, Washington, D. C., medical director, American National Red Cross, who allotted \$2,625, a similar amount was then obtained from the federal government, and the combined total will be used to finance the program.

MISSOURI

Public Health Program at Clinical Conference—A public health meeting, Monday evening, will be a feature of the Kansas City Southwest Fall Clinical Conference, October 4-8. Speakers will be Drs. Jay Arthur Myers, Minneapolis, Milton A. Bridges, New York, and Morris Fishbein, Chicago, editor of THE JOURNAL. Their subjects will be respectively "Driving Tuberculosis from Our Midst," "Facts and Fallacies Regarding Food and Diet," and "Your Heart and Your Life." A new item about the conference appeared in THE JOURNAL, September 12, page 883.

NEW YORK

District Meetings—The annual meeting of the Sixth District Branch of the Medical Society of the State of New York was held in Ithaca, September 17. Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia, presented a paper on "Diseases of the Lungs" and Dr. John C. M. Brust, Syracuse, "Diagnosis and Treatment of Anal Abscess and Fistula." Drs. Stafford L. Warren and Charles M. Carpenter, Rochester, displayed colored motion pictures on heat treatment of gonorrheal infections, Dr. William A. Brumfield Jr., Albany, of the state health department, discussed the state syphilis control program and Dr. John K. Deegan, Albany, described the new

Hermann M Biggs Memorial Hospital, Ithaca. Addresses on state society affairs were made by Drs Floyd S Winslow, Rochester, president, David J Kaliski, New York, chairman of the workmen's compensation bureau, and Peter Irving New York, secretary. —These officers of the state society and Dr Frederic E Elliott, Brooklyn, chairman of the committee on economics, also addressed the annual meeting of the Seventh District Branch at Willard September 24. Drs Arthur Krida, New York, and William J Merle Scott, Rochester, spoke on "Surgery of the Knee Joint" and "Differentiation of Benign and Malignant Lesions in the Gastro-Intestinal Tract." Dr Ross E Herold, clinical director of the Willard State Hospital, conducted a dry clinic and Dr Edward G Winkler, Buffalo, presented a motion picture showing various procedures in gynecology.

New York City

First Harvey Lecture—Dr Wilder G Penfield, professor of neurology and neurologic surgery, McGill University Faculty of Medicine, Montreal, will deliver the first Harvey Lecture of the season at the New York Academy of Medicine, October 15. His subject will be "The Relation of the Cerebral Cortex to Consciousness."

The Academy's Ninth Graduate Fortnight.—The New York Academy of Medicine will present its ninth annual graduate fortnight during the two weeks October 19-31 on "Trauma, Occupational Diseases and Hazards." Clinics will be held in various hospitals from Monday to Friday each week in the afternoons, and scientific addresses will be delivered each evening at the academy building. Dr Henry E Sigerist, professor of the history of medicine, Johns Hopkins University School of Medicine, Baltimore, will deliver the Wesley M Carpenter Lecture Monday evening October 19, on "The Historical Background of Industrial and Occupational Disease." On a special program arranged by the Medical Society of the County of New York for Monday evening October 26, Hon. Bernard L Shientag and Hon. Meier Steinbrink, justices of the state supreme court, will discuss "The Workmen's Compensation Law Its History and the Lessons It Holds for the Future" and "The Medical Witness" respectively. Among other speakers will be

- Dr Alfred Blalock Nashville Tenn, Shock and Hemorrhage
- Dr Marvin A Stevens New Haven Conn Hazards in Athletics
- Dr Alice Hamilton Boston Medical Aspects of Industrial Poisonings
- Dr Temple S Fay, Philadelphia Results of Treatment of Cerebral Trauma Based upon the Laws of Cerebral Hydrodynamics
- Dr John J Moorhead Accidents and Their Management
- Dr Robert H Kennedy The Medical Problem in First Aid
- Dr Foster Kennedy Fatigue and Noise in Industry
- Dr James Ewing Relation of Trauma to Malignant Tumors
- Dr William Darrach General Principles of Fracture Treatment
- Dr James M Hitzrot Hand Injuries
- Dr Frederic W Bancroft, Burns Thermal and Electrical Radiant and Chemical
- Alexander O Gettler Ph D, Toxicology of Industrial Poisonings
- Dr Byron P Stookey Nonoperative versus Operative Treatment of Spinal Cord Injuries Associated with Vertebral Fractures and Dislocations
- Dr Arthur M Wright Trauma of the Abdomen
- Dr Francis B Berry Trauma of the Chest.
- Dr George F Cahill Trauma Involving the Kidney the Ureter and the Bladder

Thursday evening, October 22, speakers will be Major Samuel A White, medical corps, U S Army, on "Medical Aspects of Chemical Warfare", Col Adelno Gibson, U S Army, "Chemical Warfare as Developed During the World War—Probable Future Development," and Dr Henry H M Lyle, "Treatment of Injuries Caused by High Explosives." The following evening the program will be on the relation of trauma to diabetes, discussed by Dr Elliott P Joslin, Boston, pulmonary disease, Dr James Burns Amberson Jr, cardiovascular disease Dr Bernard S Oppenheimer, and the nervous system, Dr Israel Strauss.

PENNSYLVANIA

Unlicensed Practitioner Fined—Mike White of Washington County was convicted September 8 of practicing medicine without a license. A \$250 fine and costs or ninety days in jail was imposed. The case was handled through the division of law enforcement of the state department of public instruction, of which the state board of medical education and licensure is a part.

Philadelphia

Society News—The first fall meeting of the Philadelphia County Medical Society was held September 23. Dr Francis Ashley Faught was installed as president succeeding Dr George C Yeager.—The Philadelphia Laryngological Society cele-

brated its twenty-fifth anniversary September 15.—Dr Walter Schiller, assistant at the Frauenklinik, University of Vienna, addressed the Obstetrical Society of Philadelphia, September 24 on "Early Diagnosis of Carcinoma of the Cervix."

Dr Anders' Will—Dr James M Anders, who died August 29 provided in his will that after the death of his widow \$50,000 of his estate is to go to the University of Pennsylvania to establish the James M Anders Foundation in the Graduate School of Medicine. Dr Anders also bequeathed \$2,500 to the Philadelphia County Medical Society to defray the expenses of the annual "Public Health Day" in the public schools, \$2,000 for the endowment fund of the society's library, and such books from his library as the library committee may select.

RHODE ISLAND

Division of Industrial Hygiene—The state department of health has established a division of industrial hygiene through funds available under the social security act. Dr James Philip Deery, Wallum Lake, is director of the division and Dr William A. Mahoney, Providence, assistant director. Dr Deery was graduated from Georgetown University School of Medicine, Washington, D C, in 1932 and Dr Mahoney from Tufts College Medical School, Boston, in 1919.

Society News—The Providence Medical Club made its second annual pilgrimage August 19 to the home of Dr William Hunter, who in 1755-1756 delivered at Newport the first systematic series of medical lectures in this country. The club was entertained by Miss Anna Falconet Hunter, great great granddaughter of Dr Hunter, and visited the site of his apothecary, the house in which he lived, the Newport Historical Society, where many memorials of him are preserved and the churchyard where he was buried in 1777, at the age of 47.

UTAH

Plague Infection—Under date of August 24, plague infection was reported in fleas taken from twenty-three prairie dogs, *Cynomys parvidens*, shot on a ranch two miles east of Hatch, Garfield County. Plague infection was reported, under date of August 26, to have been proved by mass inoculation of material from two prairie dogs shot August 6 on a ranch five miles northeast of Panguitch, Garfield County, according to *Public Health Reports*.

VIRGINIA

State Medical Meeting at Staunton.—The sixty seventh annual session of the Medical Society of Virginia will be held at Staunton, October 13-15 with headquarters at the Hotel Stonewall Jackson. Dr William D Haggard, Nashville Tenn, will give an address at the opening general session, Dr Lloyd W Ketron, Baltimore, will address a general session Wednesday on "Tuberculosis of the Skin," at which Dr Philip St L Moncure, Norfolk, will give his presidential address, on "The South in Medicine and Surgery." Virginia speakers on the program will include

- Dr Harvey B Haag, Richmond Studies on the Persistence of Action of Digitalis and Digitalis Bodies
- Dr Walter B Martin Norfolk Adhesive Pericarditis with Decompression Treatment by Evulsion of the Left Phrenic Nerve
- Dr Emmette T Gatewood Richmond Bronchoscopic Observation of Laryngotracheobronchitis in Children with Obstructive Dyspnea
- Dr Charles W Putney Staunton Treatment of Fractures of Long Bones by Use of an Improved Fracture Reducing Frame
- Drs John H Neff and Edgar W Kirby Jr University Prostatic Obstruction
- Dr William Lowndes Peple, Richmond, Radium in Treatment of Non malignant Diseases of the Uterus
- Dr Linwood D Keyser, Roanoke Stone in the Urinary Tract

There will be a symposium on endocrine diseases presented by Drs Edward L Alexander Newport News, Charles J Andrews, Norfolk, and Edwin P Lehman University

WASHINGTON

Society News—Dr James W Henderson Longview was elected president of the Public Health League of Washington at the annual meeting September 1 in Yakima.—Dr Howard B Kellogg addressed the King County Medical Society Seattle October 5 on "Regional Ileitis" and Drs Donald V True blood Clyde R Jensen and Terence T Dawson gave a five year report of the tumor clinic at the King County Hospital.

WISCONSIN

State Medical Election—Dr James C Sargent Milwaukee, was chosen president elect of the State Medical Society of Wisconsin at the annual meeting in Madison September 10 and Dr Stephen E. Gavin Fond du Lac was installed as president. The 1937 meeting will be in Milwaukee.

GENERAL

Poliomyelitis Closes Schools—Opening of schools in Ashtabula, Ohio, was deferred because six cases of poliomyelitis were reported in the city September 8.—Schools in West Pottsgrove, Pa., were closed September 10, for several days after a case of infantile paralysis was found in a family with several children of school age.

Decline in Appendicitis Death Rate—A steady decline in the mortality rate from appendicitis among industrial policyholders of the Metropolitan Life Insurance Company has been noted in the five year period 1931-1935, according to the *Statistical Bulletin*. In the age group 1 to 74, the rate dropped steadily from 14.3 per hundred thousand in 1931 to 11.5 in 1935, a decrease of 20 per cent. Among white male policyholders the rate last year, 13.5 per hundred thousand, was the lowest recorded in this group since 1919, while the rate among white women policyholders was the lowest registered in twenty-five years. Provisional figures for the first seven months of 1936 indicate that the death rate from appendicitis will drop to an even lower level this year than in 1935. In the period 1931-1935 the death rate was the highest (21.1) for white male policyholders in the age group 65-74, the same age group showing the highest rate (19) among white women policyholders.

Cancer Death Rate for 1935 Highest on Record—In a recent analysis of deaths from cancer, Frederick L. Hoffman, LL.D. Biochemical Research Foundation of the Franklin Institute, Philadelphia, points out that the cancer death rate for 184 cities with a population in 1935 of nearly 46,000,000 was 125.6 per hundred thousand of population against a rate of 123.1 in 1934, establishing the highest death rate from this cause since records have been carefully observed. The actual number of deaths in the 184 cities increased from 55,201 in 1934 to 57,309 in 1935, while 107 cities reported increases and seventy-seven decreases in their cancer death rates. The ten cities with the highest cancer death rates were Madison, Wis., 286.8, Concord, N. H., 238.4, Portland, Me., 229.4, Pasadena, Calif., 218, Troy, N. Y., 187.6, Boston, 187.3, Shreveport, La., 185.2, Pittsfield, Mass., 183.5, Spokane, Wash., 182.8, and Quincy, Ill., 178. In the five largest American cities, Chicago, Detroit, Los Angeles, New York and Philadelphia, the highest rate (147.5) was returned for Philadelphia. Detroit was the only city in this group to show a decrease (67.8). Presenting comparative rates in certain foreign countries, Dr. Hoffman points out that Switzerland reported an increase from 115.8 per hundred thousand of population in 1907 to 147.3 in 1934. Death rates, based on specified types, were 43.2 per thousand for cancer of the female genital organs in single women (25 years old and over), compared with 64.6 for married, widowed and divorced women. For cancer of the breast the rate for single women was 54.6, and for married, widowed and divorced women it was 49.1.

The International Society of Surgery—The International Society of Surgery, founded in 1905 at Brussels through the initiative of the Belgian Surgical Society under the leadership of Drs. Charles Willems of Ghent and A. Depage of the University of Brussels and surgeon in chief of the Belgian army, will hold its next session in Vienna in September 1938. The society now has nearly 2,000 members, who represent forty-five nations. Fellowship is obtained solely by recognized professional merit based on the recommendation and endorsement of a national committee on credentials in each of the constituent countries. A triennial congress is held. The scientific program continues for three days and is devoted mainly to the discussion of live and controversial questions of immediate importance to the profession. These subjects are selected long in advance by an international committee, to be debated by essayists or rapporteurs selected from the five countries whose languages are officially recognized by the congress. The essays are translated into five languages (French, English, German, Italian, Slav [Polish] and Spanish) and distributed to the fellows long in advance of the congress. The affairs of the society are managed by a council consisting of representatives elected by the delegates of each one of the constituent countries with the aid of an executive committee or bureau permanently established in Brussels, consisting of an executive chairman (Professor Verhoogen), the secretary general (Dr. Mayer), the treasurer (Dr. P. Lorthioir), and the president and vice presidents as ex officio members. Dr. Leopold Mayer of Brussels has been the general secretary during the thirty-one years of its existence. The World War suspended the activities of the society from 1914 to 1920 when the fifth congress was held in Paris under the presidency of Prof. W. W. Keen of Philadelphia. Thus far the congresses have been held in Brussels, New York, Paris, London, Rome, War-

saw, Madrid and Cairo. Its presidents have been Kocher of Bern, Czerny of Heidelberg, Lucas-Championnière of Paris, Depage of Brussels, Keen of Philadelphia, Macewen of Glasgow, Giordano of Venice, Hartman of Paris, de Quervain of Berne, von Eiselsberg of Vienna and Rudolph Matas of New Orleans. Dr. Lorthioir of Brussels, who had been the treasurer of the society since its foundation, was elected at Warsaw but died before he could preside at Madrid in 1932 and was succeeded by de Quervain, vice president, who officiated in his place. Professor von Eiselsberg, who was to have presided at Cairo, was ill in Vienna, and Dr. Schoenmaker of The Hague, vice president, presided in his place. The American constituency of the society is one of the largest in the organization. Out of a maximum quota of 150 members allowed for the United States, 127 American surgeons—all distinguished by their rank and the merit of their contributions, have been admitted to fellowship on the recommendation and endorsement of the American committee, which at present consists of Dr. Eliott C. Cutler, professor of surgery at Harvard (chairman), and Drs. Eugene H. Poole of New York, and Rudolph Matas of New Orleans. The eleventh congress will be held at Vienna in September 1938 under the presidency of Dr. Rudolph Matas, emeritus professor of surgery, New Orleans, with Profs. Ferdinand Sauerbruch of Berlin and S. Hybbinette of Stockholm, vice presidents. The subjects selected for special discussion are (1) the surgical treatment of arterial hypertension, (2) bone grafts and (3) the surgical treatment of cysts and tumors of the lungs. The conducted sight-seeing tours usually provided by the society for the convenience and entertainment of those who attend the congress are being planned for the congress through Czechoslovakia, Hungary, Dalmatia and other countries of special interest to tourists.

Society News—The International Association of Police and Fire Surgeons and Medical Directors of Police and Fire Surgeons and Medical Directors of Civil Service Commissions will hold its annual meeting at the Hotel Taft, New Haven, Conn., October 8-10.—The annual meeting of the Southwestern Medical Association will be held in El Paso, Texas, November 19-21. Guest speakers will be Drs. Harold Brunn, San Francisco, Thomas E. Carmody, Denver, Ralph A. Kinsella, St. Louis, James T. Case, Chicago, Warren T. Vaughan, Richmond, Va., Nelse F. Ockerblad, Kansas City, Mo., Willard R. Cooke, Galveston, Texas, and Isidore Cohn, New Orleans.—The next annual session of the American Therapeutic Society will be held in Atlantic City, June 4-5, 1937. Dr. Chevalier L. Jackson, Philadelphia, is president and Dr. Oscar B. Hunter, Washington, D. C., secretary.—The American College of Physicians has purchased a residence at Forty-Second and Pine streets, Philadelphia, to establish permanent headquarters.—The American Association of Industrial Physicians and Surgeons will meet in Atlantic City, October 7-9, at the Traymore Hotel.—The American Dietetic Association will hold its nineteenth annual meeting at the Hotel Statler, Boston, October 12-15. Speakers will include Drs. Chester M. Jones on "Protein Deficiencies", Walter Bauer, "Diet for Arthritis", George R. Minot, "Anemias of Nutritional Deficiencies", Charles Macfie Campbell, "Diet of Psyche", Wilson G. Smilie, "Place of the Nutritionist in Public Health Programs". All are of Boston. Vilhjalmur Stefansson, Ph.D., New York, will address the annual banquet on "Adventures in Diet."

FOREIGN

Malaria Congress Postponed—The third International Congress on Malaria, scheduled to be held in Madrid, October 12-18, has been postponed on account of the present situation in Spain, it is announced. It is hoped to convene the congress sometime during the spring or summer of 1937. Dr. E. Luengo, Madrid, is general secretary.

Society News—The first European Congress of Reconstructive Surgery was to be held in Brussels, October 3-4.—The ninth International Congress of Military Medicine and Pharmacy will be held in Bucharest, Rumania, May 8-14, 1937. Subjects to be considered include organization and functioning of health service in the combined operations of armies of land and sea, transport, hospitalization and treatment of gassed persons, surgical service for motorized troops.—The Holland Gynecologic Society at Amsterdam is to organize an International Congress for Obstetrics and Gynecology in connection with its fiftieth anniversary in 1938. It is reported. The secretary of the committee organizing the congress is Dr. F. C. van Tongeren, University Clinic for Obstetrics and Gynecology, Wilhelmina-Gasthuis, Amsterdam. W.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 12, 1936

Lord Moynihan Is Dead

The death of Lord Moynihan in his seventy-first year has removed the foremost figure in British surgery. While suffering from the blow of his wife's death, which he felt severely, he had a seizure, never recovered consciousness and survived her only a week. The son of an Irish officer who served with distinction in the Crimean war and Indian mutiny, he was trained at the Leeds Medical School and graduated M.B. in the University of London in 1887. In 1893 he passed the examination for master of surgery and received the gold medal. He was appointed a teacher of anatomy at the Leeds Medical School and later assistant surgeon. His progress was rapid. In 1909 he became professor of surgery in the Leeds Medical School, in 1912 he was knighted and was elected to the council of the Royal College of Surgeons and in 1926 to the presidency, a position which he held for the unprecedented period of six years. In 1918 he was made a baronet and in 1928 he became Baron Moynihan of Leeds. In the great war he was consulting surgeon to the British expeditionary force. Academic honors were showered on him from all over the world.

Moynihan began his career as a general surgeon, but he soon devoted himself to the surgery of the stomach, gallbladder and intestine, of which he became the leading exponent in this country. The subject was in its infancy when he began to work at it in association with another great abdominal surgeon, the late Mayo-Robson. Together they wrote a book on Diseases of the Stomach, which was published in 1901, at a time when little was known of the subject from the surgical standpoint. Moynihan was not long in impressing his remarkable personality on the surgery of the abdomen and in raising the previously high reputation of the Leeds school to its zenith. Enthusiastic energetic in testing the latest ideas of others and in producing his own a beautiful operator and a master of trenchant exposition his clinic and his writings attracted the whole surgical world. He was indeed, as Rutherford Morison termed him, 'a live wire'. He was the British counterpart of J. B. Murphy for whom he had an intense admiration, as the first Murphy memorial lecture delivered by him to the American College of Surgeons at Montreal in 1920 shows. He was incomparably the best speaker in the profession and one of the very few in its history who could be called an orator. He could without hesitation deliver a perfectly phrased lecture without a note, though it is said that he previously memorized his lectures. His most important work was first delivered as addresses to medical societies, which were later collected and published in book form. His command of language enabled him to crystallize his teaching in telling phrases which live.

PATHOLOGY OF THE LIVING

In an address with the title "The Pathology of the Living" he contrasted the pathology of the living with the pathology of the dead. He pointed out that the knowledge gained during an operation showed that the postmortem evidence was of small value compared with that which had been furnished during the life of the patient. It was of greater import to see the actual condition in life of an organ that was abnormal than to see it months or years afterward when unalterable and extensive advances and perhaps terminal infection had been added to the simpler original cause or the disturbance in health. It was of much more importance to know the pathologic conditions that caused present suffering—a change that perhaps

was remediable—than to know the fullest particulars of an unhindered morbid change that at last caused death. This was a favorite thesis, to which he returned again and again.

INAUGURAL SYMPTOMS

Closely connected with the preceding subject was another address given under the title of "Inaugural Symptoms" in 1908. He pointed out that when the textbooks of medicine were written it was the late symptoms and signs which were thought to be characteristic. But late symptoms were too often the heralds of death, while inaugural symptoms might be the cry for timely surgery. There was need for the earnest investigation of inaugural symptoms. Malignant disease came too often to surgeons when the time for safe operative treatment was past. "We hesitate to diagnose cancer of the stomach before a lump can be felt. We question the evidence of duodenal ulcer until hemorrhage occurs, although it is a late, dangerous and preventable complication. We dare not hint the presence of gallstones till jaundice comes, though symptoms of the plainest meaning have been present for years. Indeed, much of the textbook symptomatology urgently demands revision."

GASTRIC AND DUODENAL ULCER

Perhaps his most important work was done in connection with the diagnosis and treatment of gastric and duodenal ulcer. He described the symptoms with great acumen and introduced the term "hunger pain" to describe a pain eased by the taking of food and appearing a few hours after the meal, which occurred both in gastric and in duodenal ulcer and was always associated with hyperchlorhydria. In gastric ulcer the pain gradually disappeared before the next meal, but in duodenal ulcer it continued until the next meal or until food was taken to relieve it. Thus the rhythm of gastric ulcer was quadruple food, comfort, pain, comfort, of duodenal ulcer, triple food, comfort, pain. Duodenal ulcer, which was far more common than gastric ulcer, could always be diagnosed with considerable confidence by the history.

THE DIAGNOSIS OF GALLSTONES

He pointed out that the error carried down from one generation to another—that in the majority of cases gallstones cause no symptoms—had been dispelled by the work of the surgeon. In operating in an advanced case of cholelithiasis a history of inveterate, though perhaps trivial, dyspepsia could almost always be obtained. The symptoms were fulness, weight distention or oppression in the epigastrium coming on soon after meals, usually within half or three quarters of an hour, relieved by belching and dismissed almost on the instant by vomiting, elicited with remarkable constancy by certain articles of diet.

THE EARLY DIAGNOSIS AND TREATMENT OF CANCER

He was never tired of impressing both the public and the profession with the importance of the early diagnosis of cancer. Too many physicians were skeptical about the good results that could be obtained from surgical treatment and in too many cases allowed the patient to drift into the condition that made recurrence after operation inevitable. Wait and see was wrong; the advice should be 'Go and look at once.' His incisive power of speech is shown by the way he startled a large audience in the house of the British Medical Association assembled to hear a popular lecture on the cancer problem. If the law of averages holds 100 persons in this room will die of cancer."

HIS WORK FOR THE SURGICAL PROFESSION

An ardent reformer, a man of consummate tact, impressive both to the profession and to the public, an excellent administrator, he was able to bring about more and greater changes in the

surgical profession than were ever before accomplished by one man. He filled the office of president of the Royal College of Surgeons with great distinction. Before his time the college was regarded by many as an examining body with an admirable museum, in connection with which valuable lectures were delivered. Under his lead extensive provision was made for experimental research, both at the college and at the Buxton Browne Research Farm, which was established at Downe in Kent. He was very keen on research, but he objected that physiology, in spite of its stupendous growth, had little interest in man and was becoming more and more remote from him. The immediate requirement was a better knowledge of the normal man and of the "near normal man." A new science of "paraphysiology" was required. He took the lead in the foundation of the *British Journal of Surgery* and during the whole period was chairman of the editorial committee. He saw that the surgeons of this country kept too far apart and he founded the Moynihan Surgical Club, the members of which spend a week together visiting hospitals abroad and meet for a second time in the year to visit a hospital in which one of them works. He was also prominent in founding the Association of Surgeons of Great Britain and Ireland. His last enterprise was the presidency of the Voluntary Euthanasia Legalisation Society, which was formed at the end of 1935 to make legal relief by death of painful incurable disease. He was to introduce a bill on the subject in the house of lords.

The Sterilization of Catgut

The recent occurrence of several groups of cases of tetanus, following operations in which catgut was used, has caused the Ministry of Health to issue a memorandum on this danger. The therapeutic substances regulations allow the sale of sterilized ligatures and sutures only under a license, the granting of which is conditional on the routine testing for sterility of samples from each batch of catgut manufactured or imported while the premises, staff and methods of manufacture are controlled by periodical inspection. But in some hospitals catgut is still used which is not so controlled. It is bought raw and is "sterilized" in the hospital by a process which may or may not be satisfactory. In nine cases (of which five proved fatal) which recently came under the notice of the ministry, the evidence pointed to such "home cured" catgut as the source of infection.

In a report rendered to the Scottish board of health in 1928 Mackie analyzed the evidence in eleven cases of postoperative tetanus that occurred between 1920 and 1928 in a single hospital which was supplied with catgut from one source and concluded that the evidence pointed definitely to catgut as the source of infection. The danger of insufficiently sterilized catgut is therefore evident.

The sterilization of catgut is an elaborate and difficult process. As many as fifty-one methods have been used and many of them have been found not to be reliable. Destruction of the spores of the tetanus bacillus is the great difficulty. Mackie found that, if the unspun ribbons were soaked in hydrogen peroxide for twelve hours and the spun strings treated with iodine water for eight days, the excess of iodine being then removed by washing in alcohol, a sterile gut with good physical properties was produced. The conclusions of the Ministry of Health are as follows: 1. Serious dangers attend the use of raw catgut or so-called internally sterilized catgut to which sterilizing processes of doubtful efficiency are applied in the hospital. 2. Many brands of efficiently sterilized catgut controlled under the therapeutic substances act are available. 3. Postoperative tetanus, gas gangrene and other infections from surgical catgut can be prevented by the use of catgut manufactured by licensees under the act.

PARIS

(From Our Regular Correspondent)

Aug. 22 1936

Organized Medicine and the Forced Retirement Bill

In a recent letter, reference was made to a bill termed the Pomaret bill, which proposes to relieve the congested condition in the liberal professions. If the bill is passed, which at present seems unlikely, all lawyers, architects, physicians and druggists will be obliged to surrender their diplomas at the age of 65 and be forced to retire from active practice without any remuneration in the form of a government pension.

The interests of the medical and dental professions in France in such matters is looked after by "syndicats," or associations which unfortunately do not include as members as large a proportion of the physicians and dentists as do the corresponding associations in the United States. Nevertheless the influence of these "syndicats" is considerable here, and they are making a strong fight against passage of the Pomaret bill, and the chances at present are that the proposed forcible retirement clause of the law will never reach a stage beyond that of discussion. The Confédération des syndicats médicaux français which includes all the local protective associations, in its August bulletin states that the idea of permitting every physician to retire at the age of 65, if he so desired, has been provided for by this association in collecting money for a mutual insurance fund, so that an annuity could be paid, enabling a physician at the age of 65 to add such a sum to any funds already set aside by him and thus permit him to live comfortably. But this retirement should remain an entirely voluntary affair. When the government delivered a license to practice in the past, no time limit as to its use was set, and hence the contract cannot be broken by one of the parties alone. The confederation is of the opinion that a voluntary retirement is not to be objected to but that retirement should not be compulsory unless an adequate annuity is given by the state to every physician who is obliged to cease practice at 65, and that half of the annuity should be given to the physician's widow in case of decease.

At the July 19 meeting of the executive committee of the Confédération des syndicats médicaux français, the following resolutions were passed as an expression of the opinion of the confederation on "bill 151 (Pomaret) tending to assure immediate and steady employment of French youth":

1. No such law, affecting unrestricted practice of medicine should have been deposited as a bill before the legislature without consulting organized medicine.

2. The federation will oppose with all the resources at its disposal the limitation of the license to practice beyond the age of 65 years. A voluntary retirement cannot be objected to, provided a fund is established by the government so that an adequate annual pension can be given those who wish to retire at the age of 65. Such a fund is to represent the total of annual obligatory premiums paid by all practicing physicians collected by the government and set aside as a mutual insurance fund for the voluntary retirement of physicians.

3. The naturalization of foreign-born physicians and medical students must be immediately prohibited. The illegal practice of medicine and quackery, as well as the unethical exploitation of pharmaceutical preparations, should be more strictly controlled than at present.

This third resolution aims to correct an abuse of the laws passed in 1935 which did not permit foreigners to be granted licenses to practice. In spite of this apparently strict regulation, many foreign born applicants for state licenses have overcome the objections by becoming naturalized and thus the overcrowding of the profession has been but little relieved.

The uncontrolled exploitation of all forms of quackery and drugs here justly merits the demand of the federation for stricter supervision

Treatment of Acute (Staphylococcic) Osteomyelitis

The treatment of acute (staphylococcic) osteomyelitis is still being discussed at the Académie de chirurgie, the leading surgical society of Paris. In the letter published in *THE JOURNAL*, June 13, papers read by Leveuf and Mathieu were referred to in which a plea was made, based on a relatively extensive experience, not to operate in cases of acute osteomyelitis due to staphylococci until the acute local and general symptoms had subsided.

At the May 27 meeting the discussion was continued by Sorrel, who has charge of a large children's surgical service in Paris and thus has ample opportunity to see such cases. He stated that the portal of entry is most frequently some skin lesion which fails to attract attention at the time when the involvement of the bone medulla manifests itself. Although the bacteria are carried by way of the blood vessels, blood cultures are negative until the acute bone symptoms appear at the same time as the general evidences of a septicemia, at which period the blood cultures become positive. An article by Bariety on staphylococcic septicemias published in the *Semaine des hôpitaux* in February was cited by Sorrel, showing that the body possesses defense mechanisms which act on the bacteria circulating in the blood, by lysis, fixation or elimination. In order that a septicemia should persist, a constant supply, i. e., multiplication of bacteria, must take place. In an acute osteomyelitis, it is the bone focus which furnishes such a constant supply. There are cases of acute osteomyelitis in which the symptoms of a general septicemia dominate the clinical picture. Such patients are more often observed by internists than by surgeons. Between these two, predominantly local and predominantly generalized cases, many intermediate cases are seen by both internists and surgeons, and it is in these that the question arises as to what form of treatment should be adopted.

Another point of interest is one conceded by bacteriologists, viz., that the staphylococcus is a poor antigen and hence that vaccination against this type of infection is difficult or impossible. This explains the slow healing of osteomyelitic foci and the frequency of exacerbations after apparent recovery.

These two facts permit one to say, first, that well localized osteomyelitic foci can be the starting point of septicemia and of secondary foci and, secondly, that the spontaneous defense mechanism of the body is powerless because it can produce but few and often no antibodies. As Mathieu stated at a previous meeting the forms under which an acute osteomyelitis can present itself clinically vary so greatly that the same treatment for all cases is impossible. As to general treatment, much was expected of vaccinations but the results have not been very encouraging. The same has been true of the bacteriophage and immunotransfusion treatment. The future alone will reveal whether the use of the Ramon staphylococcus anatoxin will be of any value.

The surgical treatment ought not to be the same for all cases. One should be guided by the local lesions and the evolution of the infection in general.

Sorrel believes that the only cases of acute osteomyelitis in which a late operation should be performed are those in which a staphylococcic septicemia exists but the bone involvement is for a long time of secondary importance. These patients should be operated on only when the general symptoms have subsided. Such cases are relatively rare. Sixty-two cases of acute osteomyelitis have been treated by Sorrel since 1931 and fifty-nine of these were due to staphylococci. Eleven of the fifty-nine patients died and recovery was more or less complete in forty-

eight. In twenty-eight cases the general infection was a severe one with extensive bone involvement. Twenty-six of these patients were operated on by resection and two by trephining, with two deaths in patients having multiple foci. In six cases the bone lesion was of secondary importance as compared to the general infection. Five of these six patients died.

Until the staphylococcus anatoxin and antistaphylococcus serum proves to give good results, Sorrel believes that early operations, such as simple incision of a subperiosteal abscess, trephining or diaphyseal resection, are indicated. Only in the severe septicemic form is a delayed operation justifiable.

The discussion was continued by Boppe, who stated that if a trephining operation is not followed by subsidence of local and general evidences of infection, a resection of the entire shaft should be performed. Boppe was in favor of delayed operation. A large number of patients, operated on late or not at all, had recovered following immobilization supplemented by general treatment. There are cases, however, in which one has the impression that the expectant method has been harmful. The prognosis of a given case of acute osteomyelitis presents many unknown elements. With the exception of blood cultures, an element of definite gravity but not at all of fatal prognostic significance, there are no sure tests which permit one to judge the evolution of an osteomyelitis.

BERLIN

(From Our Regular Correspondent)

Aug. 4, 1936.

Convention of German Phthisiologists

At the recent annual convention of phthisiologists the question of legal measures in furtherance of the antituberculosis campaign was discussed. The groundwork for a greater centralization of antituberculosis activities was laid when the centers for the care of the tuberculous throughout Germany were placed under the supervision of officers of the public health service and the latter organization thus assumed the care of tuberculous patients as a part of its legitimate duties (*THE JOURNAL*, Sept. 22, 1934, p. 932, June 1, 1935, p. 2011). Four papers on the question of legal regulation were submitted to the congress and are herewith summarized. The protection of children and young people against infection with tuberculosis by persons not belonging to the family is of the utmost importance. It was demanded that in social institutions, based on legal compulsion, such as the schools, yearly physical examinations of both teacher and pupil be made obligatory. Any person found to be infected should be segregated from his fellows. A recent decision of the reichsgericht (the highest German tribunal) expressly fixes responsibility of the appointed officials. Before admission to certain semivoluntary groups (youth organizations, apprenticeships and so on) the candidate must be certified as free from tuberculosis. In voluntary relationships such as domestic service and the kindergarten, employers and parents should demand certificates of health for employees or children from the antituberculosis centers. Further legislation to supplement that already in force should provide for amplification of the present law on compulsory reporting of tuberculosis cases, compulsory medical examination at the tuberculosis stations, prophylactic measures (compulsory isolation if necessary), sanitary supervision of certain occupational groups, and more drastic measures of disinfection. In order to protect the community against occupational tuberculosis the exercise of certain callings should be forbidden a person who presents an active infectious tuberculosis, the person so excluded to be indemnified of course, against economic distress. Furthermore compulsory examination of both healthy and sick persons should be stipulated such examination to include roentgenography of the thorax. Since the entire popu-

lation cannot be examined simultaneously, local sanitary officials should be empowered to select the persons to be examined at a given time. Compulsory treatment is both necessary and practicable. It might consist of detention in an institution or of surgical intervention, thoracoplasty, for example. If the patient withholds consent to an operative intervention that promises to be successful, compulsory curative measures should be carried out until the patient is no longer able to spread the infection to others, the costs of such treatment to be divided between the patient himself and the public health service. Repeated reference was made to the successful experimentation with compulsory isolation of asocial tuberculous patients which has already been attempted in Thuringia (*THE JOURNAL*, Oct 19, 1935, p 1284). The discussion that followed the reading of these papers showed that the phthisiologists as a whole approved of the new measures suggested. Both the papers and the discussion are of especial importance, since they provide a substantial foundation for new antituberculosis legislation.

Klare of Scheidegg submitted a report on active pulmonary tuberculosis in children and young persons. The follow-up control of 502 actively tuberculous children and youths who received treatment at Klare's institution during the years 1916-1933 yielded a gloomy prognostic picture. (Control was effected by means of triennial follow-up questionnaires.) The chances for recovery of patients under the age of 7 who present far advanced forms of the disease are poor, for this group a mortality of 95.5 per cent was determined at the end of ten years. For patients under the age of 13, the corresponding death rate is lower by 15 per cent, but 80 per cent is still a shockingly high figure. Klare hopes to be able to reduce the mortality to 75 per cent or perhaps even to 65 per cent, lower values can scarcely be obtained, as puberal influences seem to impair all the organism's forces of defense against phthisis. Lymphatism is always to be regarded as a favorable indication in tuberculous children and adolescents. Early detection of the disease may favor recovery by making possible the institution of an active therapy (collapse treatment). Cavernous decomposed early infiltrates above all can almost without exception be brought to a healing by means of a timely initiation of collapse therapy.

Böhne of Hamburg stated (on the basis of 20,000 cases examined) that the Meinicke tuberculosis reaction is markedly specific. By it active pulmonary tuberculosis as well as widespread bone and genital tuberculosis can be determined. The test fails, however, to establish quite recent infiltration. The activity and extent of the process run principally parallel to the intensity of the reaction manifested. Inactive cases exhibit negative reactions. The Meinicke reaction is above all of practical value for the detection of pathologic processes that are not clinically and roentgenologically demonstrable.

With regard to measures of disinfection, E. Gabe stated that the danger of infection from dust irritation has been grossly exaggerated. Guinea-pigs, for example, will remain healthy even after a twenty-four hour stay in the dusty atmosphere of a room in which blankets and clothing of tuberculous persons have been beaten out. Dust specimens from the floor of the solariums for the tuberculous, from other rooms and from washing water after the cleaning of the wall paper were all found to be free from tubercle bacilli. In institutional hygiene, the discipline is the most important factor and chemical disinfectants are to a great extent considered unnecessary. For blankets formaldehyde disinfection and for linen boiling are the methods of choice. The complete destruction of the excreta is of the utmost importance since danger of infection through the drainage is thus obviated.

Finally the question of the significance of thoracoplasty was discussed. Graf of Coswig stated that investigations carried on during the past fifteen years have consistently led one to

form the opinion that disintegrating tuberculous cavities in the lungs, or at least those which develop to medium size and endure for a number of months, excepting in rare instances, do not come again to a healing without operative intervention. Such cavities are a constant menace to the patient's life and, besides, their presence means a serious risk of acquiring the infection for persons in proximity to the sufferer. Thoracoplasty should be resorted to in proper cases if pneumothorax and its supplementary measures prove insufficient. Thousands of patients who otherwise would have been lost have this operation to thank for their recovery. During the past ten years various types of this intervention have been worked out that not only bring about an authentic healing of the cavernous areas, which are situated for the most part in the upper portion of the lungs, but also make it possible to preserve the still healthy pulmonary tissue on the affected side.

VIENNA

(From Our Regular Correspondent)

Aug 14, 1936

The Ninth International Dental Congress

The largest of all dental organizations, the *Fédération dentaire internationale*, is accustomed to hold a quinquennial scientific convention. The ninth congress of the federation was held early in August at Vienna. For the last two and one-half years a local committee of sixteen, of which Professor Dr. Pichler was chairman, had been preparing for this gathering. In working out a program it was decided that each forenoon was to be devoted to the reading of papers on the more recent investigations of the last five years and the afternoons were to be given over to demonstrations, carried out before small groups, of various special therapeutic methods and examination procedures. To reduce to a minimum the linguistic difficulties of an international convention, for the first time at one of these congresses a method was used that has been proved serviceable in the deliberations of the League of Nations. The speaker had a microphone before him and his speech was listened to by interpreters, wearing earphones, who were housed in closed booths. As the words of the speaker were received by the interpreters the latter would immediately translate orally into a microphone, and an amplifying system would then convey the translated speech to the audience seated in the hall. The speeches were broadcast in German, French and English and the listening delegate could select whichever language he wished by means of an apparatus attached to his chair. Thanks to a corps of first class interpreters, the translations were made so rapidly that a listener could well believe that the speaker was talking in any of the three tongues. In addition, each delegate was presented prior to the transactions with a two volume 1,600 page edition of all the original discussions to be read. This meant that only the remarks of the open discussions would be new to the audience. Altogether some 4,000 dentists from forty-five different countries participated in the proceedings. Prof. G. Villain of Paris occupied the chair. After the addresses of welcome by the governmental and academic dignitaries the presentation of the international Miller prize for the most important work of the last five years took place. Profs. Maurice Roze of Paris, Bernhard Gottlieb of Vienna and A. Cieszyński of Lwow each received the gold medal.

Proceedings were held simultaneously in three large assembly halls and reflected throughout the tremendous interest of the participants. In section 1 Professor Grumbach of Zurich as principal speaker, read a paper on focal infection. Our increased knowledge of oral sepsis has brought with it new and perplexing problems and it has brought to light the relation of the teeth to various diseases. In many disease condi-

tions formerly loosely ascribed to cryptogenic sepsis," focal infections are now inculcated. Under "focal infection" are classified those disease conditions characterized by the presence of a chronic hidden focus of infection from which at greater or lesser intervals bacteria and their toxins enter the blood and give rise to various pathologic manifestations. About the teeth such foci are particularly apt to take the form of the so called apical granulomas, from which bacteria in many instances are carried to the blood. Such granulomas may thus be the cause of rheumatism, nephritis, defects of the cardiac valves, septic processes, febrile conditions and a whole catalogue of other diseases. This theory, which originated in America, is not as vigorously defended as it was ten years ago.

Professor Palazzi of Milan discussed the trend in the last five years toward more detailed histologic and anatomic dental examinations. Professor Shour of Chicago spoke on the interrelation of the endocrine glands and the teeth, he stressed the fact that these glands exert an important influence on the normal formation of the teeth. Bisection or cauterization of the sympathetic nerves in the region of the gonads (Doppler's operation) has an incontestably favorable effect on various diseases of the gums (pyorrhea alveolaris). In addition, the relation of the parathyroid glands to calcium oxide metabolism, first discovered by the Viennese anatomist Erdheim, is of especial importance.

In section 2, discussions of the substitution of artificial teeth were furnished by Dr Stansbery of Seattle and Professors Fish of London, Villain of Paris and Wustrow of Greifswald. The last named exhibited models to prove that in mastication with a plate prosthesis a force of some 15 Kg. can be placed in action without any damage to the mucous membrane lying beneath the prosthesis. In section 3 the history of dentistry was the principal topic. A paper by Professor Salamon of Budapest on the dental bridge was of interest. Dental bridges were introduced into Europe from America by Thomas Evans in 1860. Evans also made known the first set of india rubber teeth in Europe. Substitution of artificial teeth was known to remote antiquity, in ancient Egypt, Etruria and Phenicia there were dentists capable of fashioning excellent dental bridges. The art subsequently became lost and was revived in the first third of the eighteenth century. The historical development of the treatment of the roots and the use of anesthesia in dentistry is likewise extremely interesting. In the year 1870 the dental engine, then driven by foot power, was first introduced, several years later came the engine driven by electricity.

The causes and treatment of dental caries was the principal topic on the second day. Professor Bunting of America reported on the investigations undertaken by the so-called Michigan Research Group, which is composed of dentists, bacteriologists and biochemists. It has been ascertained from these investigations that the causative agent of dental caries is an organism of the *Bacillus acidophilus* type. This organism is always present in carious dental substance and can be detected in the saliva of patients with dental caries. It is not to be found, on the contrary, in persons immune to the disease. The Michigan investigators undertook nutritional tests in the form of group examinations of the different dietetic regimens in use among school children and institutions. Indications were that the ingestion of foods containing calcium oxide phosphorus vitamin D or alkaline nutriment is virtually without influence on dental caries.

On the other hand the old finding was confirmed that a regimen rich in sugar fosters the propagation of *Bacillus acidophilus* and therewith caries. Conversely, studies of the saliva showed that the development of this bacillus is impaired by a diet deficient in sugar. The type of nutriment was regarded by this group of investigators not as in relation to the chemistry of the bodily fluids but as exerting a direct

influence within the oral cavity proper, in the immediate surroundings of the teeth. The possibility of producing a protective substance against caries had been demonstrated and inoculation experiments had already been attempted. If *Bacillus acidophilus* was present in the oral cavity, inoculation might even produce dermal reactions. The protective substance against caries seemed to be present in the blood, so one should consider the possibility of a systematic inoculation therapy in caries.

A paper by Professor Euler of Breslau on dental defects conditioned by the nutriment dovetailed admirably with that of the Michigan men. In teeth, discovered in excavation that probably are about 4,000 years old, Euler was able to establish dental caries in only 1.5 per cent of the skeletal remains, a contrast to the frightfully high present-day incidence. The speaker called attention to the decalcifying action of lactic acid and described how the carious process is furthered by the lodging of food remnants (especially particles of sweet foods) between the teeth. Honey forms an exception, it causes no fermentation in the mouth and since it contains formic acid and formaldehyde (although in small amounts, to be sure) it acts as a mild antiseptic. Professors Weaver of London and Paffenberger of Washington and Drs. Bauer of Innsbruck, Joachum of Brussels and Smreker of Vienna provided discussions of the various problems presented by caries and other dental material. Dr. Weinmann was able to prove the existence in the saliva of a protective substance against caries. The salivary corpuscles contain a ferment-facilitating decomposition of protein that is found in smaller quantities in carious subjects and in larger quantities in the noncarious. Weinmann was able further to show that persons inclined to have carious teeth secreted much less saliva than persons with healthier mouths. The bactericidal power of the saliva is also connected with the salivary corpuscles. The latter, somewhat like the leukocytes, form a sort of police force.

One section of the congress concerned itself with discussions of dental education. Thorough descriptions of the organization of instruction in dentistry in their respective countries were provided by speakers from Poland, Japan, France, Hungary and Austria. In Austria the title "zahnarzt" (dental physician) is protected by the most rigid legal restrictions. In that country every dentist must first be a regular doctor of medicine and then spend four additional semesters in dental studies after which he must pass a rigorous examination in the field. The Austrian system of regulation has come to serve as a model for the other countries of Europe. Interesting too was a paper by Dr. Mansbach of Palestine on the dental hygiene examination of a large number of children between the ages of 3 and 12. Children from rural communities where the diet is chiefly vegetarian presented an almost complete immunity from caries, whereas among children from Jerusalem and other urban areas there was a substantial incidence of dental caries.

The problem of anesthesia took one entire morning session of the congress. Two opposing schools engaged in debate the adherents of narcosis and the adherents of injection anesthesia. Professor Sicher of Vienna states as a fact that, in every country where the study of maxillary anatomy has attained a high level, injection anesthesia rather than the more mechanical procedure of narcotic anesthesia is the method of preference.

Professor Parma of Prague, speaking on the problem of roentgenology, declared that no enterprising dentist could reckon without it. Some roentgenograms of teeth were exhibited. Interest attached to the problems of treating and filling the roots. In recent years the formerly overdone practice of extracting diseased teeth has fortunately been sharply checked and dentists generally have come to favor the killing and filling of the diseased roots. The pulp, the living dental marrow, is indeed the most precious part of any tooth and should be pre-

served as long as possible. In England, in Switzerland and in Austria, special prominence is accorded this problem. Gottlieb of Vienna in particular has devised a unique method: he does not subject the living pulp to treatment with medications but removes it under anesthesia by a purely surgical procedure. By this means the connective tissue is stimulated to a new formation of adamantine. There has as yet, however, been no agreement as to the method to be employed in the treatment of gangrenous pulp.

One section concerned itself exclusively with the question of dental hygiene in the school. In Vienna as early as 1911 this problem was partially solved but not till 1922 was a systematic effort made to cope with it. Drs. Driak and Greiner, both of Vienna, submitted discussions. Austria at present boasts forty school dental clinics, eighteen of which are located in Vienna. Whereas in the year 1922 less than 4,000 children were at any one time under the supervision of the school dental hygiene service, in the year 1934-1935 91 per cent of Austrian school children (namely 127,000) were under observation of these school clinics. Of the latter number more than 60 per cent were recorded as in need of treatment and 86 per cent of these were subsequently discharged with healthy sets of teeth.

Similar reports came in from other countries. In Oslo, Norway, for example, of 25,000 children examined, only 160 were free from dental caries. Dr. Witthaus of the Netherlands traced defective maxillary development to the use of stupidly devised sucking bags and to the habit of thumb and finger sucking in infancy. Premature loss of the temporary teeth inhibits proper mastication, and this gives rise to impaired maxillary development. Witthaus believes that caries of the permanent teeth is dependent on and conditioned by caries in the temporary teeth. He discountenances the unrestricted nibbling of sweets and advocates the eating of raw fruits at the conclusion of a meal as a means of cleansing the teeth.

Dr. Kantorowicz, who now resides in Istanbul, was the organizer of a systematic program of dental hygiene in the schools of Germany, his former home. By ordinary hygienic procedures he was able to maintain healthy dentition in 90 per cent of the German school children. Kantorowicz also postulated the extension of dental hygiene to the temporary teeth, the instruction of children in careful dental hygiene, early correction of defective dentition, and prophylaxis for diseases of the dental bed. These fundamentals should be carried on with the child of school age and later extended to the entire population, effecting as it were a systematic national dental hygiene. Kantorowicz cited Palestine as the example of a country where the campaign against a neglect of oral hygiene has gone forward with success.

The discussions of pyorrhea alveolaris marked the culmination of the congress. This disease leads to an atrophy of the gums and not infrequently to an involvement of otherwise healthy teeth, which in turn brings about an irremediable loosening process. Pyorrhea claims no fewer victims than caries. The interest of the entire medical world in this formidable problem of public health is therefore readily understandable. Prof. Maurice Royé of Paris (winner of the Miller prize) attacked the question of pyorrhea with a substantial discussion of the influence of defective heredity. He suggested that defective arrangement of the teeth and disturbances of the bite facilitate the loosening process. Professor Entin of Leningrad discussed the pathologic anatomy of the condition: atrophy of the gums and the formation of pus pockets may be taken as characteristic. The last named manifestation is not yet well understood: it is believed that disturbances of the metabolism and of the glands of internal secretion are etiologic factors in the disease. Of persons suffering from pyorrhea alveolaris 67 per cent are between 30 and 40 years of age; there is a

higher incidence among women of this age group. Dr. Entin is of the opinion that the gastro-intestinal system figures in the etiology of the disease. He believes that observation of the nervous system will yield important indications. Disorders of the intestine, kidneys and liver also all too frequently coincide with dental disturbances.

Professor Häupel of Prague discussed his own philosophy of the etiologic factors in pyorrhea alveolaris. It is his belief that any general illness which is influenced by cellular metabolism is capable of producing pyorrhea. The disease has an extremely high morbidity in many countries. According to Häupel, it is more frequent among slender types than among the stout. It may appear as a sequel to infectious disease, notably influenza. Dr. Weinmann of Vienna interposed that he had observed a hypofunction of the anterior lobe of the hypophysis in pyorrhea alveolaris patients. Professor Häupel for his part had often observed that Doppler's operation leads with virtual experimental certainty to an amelioration of the purulent and loosening processes. Doubtless too, important roles are played by local factors such as tartar or the irritation set up by ill fitting artificial teeth. Häupel recommends as therapeutic measures the application of oxygen and of escharotics, and the opening and eradication of the pus pockets. The goal is the restoration of healthy gums and to accomplish this an adequate dental hygiene is also necessary.

Dr. Orman of the Viennese school is of the opinion that two forms of pyorrhea alveolaris may be differentiated, the one due solely to neglect of oral hygiene, the other dependent on disturbances of the general metabolism. To be sure, the medical procedure is identical for the two forms. The first consideration is always a painstaking removal of the tartar and the pus pockets. Any course of treatment will be rendered useless if the patient is not made conversant with the correct technique of the tooth brush, a knowledge that should be inculcated in childhood. Any defects of dentition should be corrected as quickly as possible. At best the treatment of pyorrhea alveolaris will require an unusual amount of time and patience.

A round of social functions together with the usual excursions and receptions brought to a close the proceedings of the ninth congress.

Marriages

NORMAN R. SLOAN to Mrs. Catherine Flynn Ward, both of Christiansted, St. Croix, Virgin Islands, August 27.

WILLIAM FREDERICK I. DEY, Saratoga Springs, N. Y., to Miss Margaret Rawlings of Poughkeepsie, June 12.

JOSEPH F. BENJAMIN, Ridgewood, N. J., to Miss Agnes Sweeney of Glen Rock, August 1.

ERNEST HENRY KEUTMANN to Miss Harriet Kenyon Todd, both of Rochester, N. Y., June 18.

JAMES BORDLEY III, Baltimore, to Miss Julia Peabody Ross of Chestnut Hill, Pa., July 4.

MARTIN F. ZIEMER, Chicago, to Miss Louise Anne Simon of Elkhart, Ind., September 20.

SAMUEL MACON CARRINGTON to Miss Nellie Upchurch, both of Oxford, N. C., July 17.

VERNON A. WEED to Miss Marjorie Kundert, both of Red Lake Falls, Minn., June 21.

GEORGE L. KRESS, Warsaw, Ind., to Miss Aline Welsheimer of Columbia City, June 14.

ROBERT A. BROWN JR. to Miss Virginia Harris, both of Greenville, S. C., May 22.

WALTER S. BOOTH, Elizabeth, N. J., to Miss Matilda Mary Nogi of Linden, June 27.

KINLOCH NELSON to Miss Alice MacGill Deford, both of Richmond, Va., July 23.

ARNOLD I. WEBMAN, Fremont, Neb., to Miss Lucille Polishuk of Chicago, June 21.

Deaths

Frankwood Earl Williams ♂ New York, medical director of the National Committee for Mental Hygiene from 1922 to 1931, died, September 24, of acute intestinal obstruction while aboard the White Star liner *Georgic*, aged 53. Dr. Williams was born in Cardington, Ohio, May 18, 1883. He attended high school in Indianapolis and received the bachelor of arts degree from the University of Wisconsin in 1907 and the medical degree from the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1912. He was first assistant physician at the Boston Psychopathic Hospital from 1913 to 1915, medical director of the Massachusetts Society for Mental Hygiene from 1915 to 1917, chairman of the Massachusetts Advisory Prison Board from 1916 to 1917, associate medical director of the National Committee for Mental Hygiene from 1917 to 1922, and then medical director until 1931. During the World War he served as first assistant and chief of the division of neurology and psychiatry in the office of the Surgeon General of the army and was a lieutenant colonel in the Officers Reserve Corps from 1919 to 1929. He was a member of the American Psychoanalytic Association, the American Psychiatric Association, the New England Society of Psychiatry, the American Psychopathological Association and the American Orthopsychiatric Association. Dr. Williams was chairman of the mental hygiene section of the National Conference on Social Work from 1917 to 1919 and from 1922 to 1924 vice chairman of the National Health Council from 1922 to 1923, member of the administrative board of the Institute of Child Guidance of the Commonwealth Fund from 1927 to 1931, member of the advisory council of the New York Health and Tuberculosis Demonstrations and also the Milbank Memorial Fund until 1931, and member of the board of directors of the New York Psychoanalytic Institute. He was also a member of the teaching staff of the Smith College for Social Work, Northampton, Mass., from 1921 to 1926 and the New York School of Social Work in 1924. From 1926 to 1929 he was a lecturer on psychiatry at the Yale University School of Medicine and from 1930 to 1932 at the Columbia University College of Physicians and Surgeons. In 1927 he received the honorary degree of doctor of science from Colgate University, Hamilton, N. Y. He contributed many books and periodical articles on mental hygiene to the literature of recent years and was the editor of *Mental Hygiene* from 1917 to 1932.

John Leo Burkart ♂ Big Rapids, Mich., Victoria University Medical Department, Coburg, Ont., Canada, 1874, Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1877, also a pharmacist, at one time state health commissioner, past president and secretary of the Mecosta County Medical Society, for many years professor of pharmacology and therapeutics at the Grand Rapids Medical College, postmaster, and for many years health officer, veteran of the Spanish-American War, aged 83, member of the staff of the Mercy Hospital, member of the staff and secretary of the Community Hospital, where he died, July 12, of coronary sclerosis.

George Frank Holland ♂ Bloomington, Ind., University and Bellevue Hospital Medical College, New York, 1903, past president of the Monroe County Medical Society, fellow of the American College of Surgeons, veteran of the Spanish-American and World wars, district surgeon to the Illinois Central Railroad and local surgeon to the Monon Railroad, surgeon to the Bloomington Hospital, aged 64, died July 15, in the Methodist Episcopal Hospital, Indianapolis, of carcinoma of the prostate.

Lucien P. McCalla, Bellingham, Wash., Missouri Medical College, St. Louis, 1888, member of the Washington State Medical Association, past president of the Whatcom County Medical Society, formerly a practitioner in Boise, Idaho, for many years a member of the state board of medical examiners of Idaho, at various times on the staffs of St. Luke's General Hospital and St. Joseph's Hospital, aged 70, died suddenly, July 17, at Georgetown, Texas.

Dennis Ralph McElhinney ♂ Elizabeth, N. J., University of Pennsylvania Department of Medicine, Philadelphia, 1903, past president of the Union County Medical Society, fellow of the American College of Surgeons, president of the medical staff and attending surgeon on the visiting staff of the Alexian Brothers Hospital, secretary of the staff and attending surgeon on the visiting staff of St. Elizabeth Hospital, aged 56, hanged himself, July 30.

Martin Isaac Marshak ♂ Bayonne, N. J., University and Bellevue Hospital Medical College, New York, 1911, served

during the World War, formerly city physician, on the staff of the Bayonne Hospital, attending physician to the Hudson County Parental Home, at one time superintendent of the Sanatorium of the Jewish Consumptives' Relief Society, Spivak, Colo., aged 50, died, July 15, of heart disease and renal colic.

Frank McDonald Denslow ♂ Kansas City, Mo., University of Kansas School of Medicine, Kansas City, 1906, member of the American Urological Association, fellow of the American College of Surgeons, served during the World War, consultant in urology, Kansas City General and St. Margaret's hospitals, aged 59, died, July 25, in St. Luke's Hospital of carcinoma of the stomach with metastasis to the liver.

George Alfred Holliday ♂ Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1897, formerly treasurer of the Allegheny County Medical Society, member of the American Urological Association, on the staffs of the Pittsburgh City Home and Hospitals, Mayview, and St. John's Hospital, aged 64, died, July 9, of carcinoma of the liver.

Horace Palmer Beck, Newport, R. I., University of Pennsylvania Department of Medicine, Philadelphia, 1897, member of the Rhode Island Medical Society and the New England Otological and Laryngological Society, formerly member of the city council, on the staff of the Newport Hospital, aged 62, died, July 5, of heart disease.

James Albert Miller, Grampian, Pa., Western Pennsylvania Medical College, Pittsburgh, 1897, member of the Medical Society of the State of Pennsylvania, past president of the Clearfield County Medical Society, for many years a member of the local school board, aged 75, died July 11, of lobar pneumonia and pyelocystitis.

William Belvidere Meares Jr., Lexington, N. C., University of Virginia Department of Medicine, Charlottesville, 1915, member of the Medical Society of the State of North Carolina, aged 47, died, July 13, in the Johnston-Willis Hospital, Richmond, Va., of pneumonia, following an operation for a tumor of the stomach.

Philip Abernethy Graves ♂ Oak Park, Ill., Dearborn Medical College, Chicago, 1904, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, for many years a member of the staff of the Chicago Eye, Ear, Nose and Throat Hospital, aged 63, died July 17.

William Jones Muzzy ♂ El Reno, Okla., Missouri Medical College, St. Louis, 1897, past president and secretary of the Canadian County Medical Society, fellow of the American Society of Clinical Pathologists, on the staff of the El Reno Sanitarium, aged 69, died, July 12, of carcinoma of the liver.

James Wheeler Miller, Hillsboro, Texas, Vanderbilt University School of Medicine, Nashville, Tenn., 1886, Bellevue Hospital Medical College, New York, 1891, member of the State Medical Association of Texas, past president of the Hill County Medical Society, aged 76, died, July 12.

Frank Manson Brown, Centerville, N. B., Canada, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, L.R.C.P., London, L.R.C.P., Edinburgh, L.R.F.P.S., Glasgow, 1887, aged 72, died, June 21, at the L. P. Fisher Memorial Hospital, Woodstock.

Samuel Fisler Ashcraft ♂ Mullica Hill, N. J., Jefferson Medical College of Philadelphia, 1888, past president of the Gloucester County Medical Society, aged 70, died, July 4, in the Jefferson Hospital, Philadelphia, of arteriosclerotic heart disease and prostatic hypertrophy.

Frank John Fara ♂ Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, member of the staff of the Hospital of St. Anthony de Padua, aged 55, died suddenly, July 22, in Berwyn, Ill., of coronary thrombosis.

George Cohn, Piggott, Ark., National Medical University, Chicago, 1909, College of Medicine and Surgery, Chicago, 1910, member of the Arkansas Medical Society, aged 59, died July 28, in a hospital at Paragould, of injuries received in an ambulance accident.

Oscar Stuart McMullen ♂ Victoria, Texas, University of Tennessee Medical Department, Nashville, 1904, past president of the Victoria-Calhoun County Medical Society, served during the World War, on the staff of the Victoria Hospital, aged 54, died July 6.

Francis James Buss ♂ Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901, member of the staffs of the Robert Burns, Belmont and Ravenswood hospitals, aged 60, died July 11, of embolism.

Marguerite Agnes Muller, Charleston S C, Medical College of the State of South Carolina, Charleston, 1931, member of the South Carolina Medical Association, aged 31, died, July 5, in the Myers Clinic Hospital, Philippi, W Va, of pneumonia

Ulysses Schuyler Colfax Busch, Cadillac, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903, at one time member of the school board of Jennings, aged 61, died suddenly, July 13, of cerebral hemorrhage

Ellsworth Paro Mills, Detroit, Detroit College of Medicine, 1899, served during the World War, aged 60, on the staff of the Highland Park (Mich) General Hospital, where he died, July 8, of intestinal obstruction due to adhesions

Eugene Justin McCarthy, Malden, Mass, Tufts College Medical School, Boston 1905, member of the Massachusetts Medical Society, member of the Veterans Administration, Boston, aged 52, died, July 28, in a hospital at Chelsea

Walter Wingart Mannhardt ♂, Custer Ohio Toledo (Ohio) Medical College, 1903, served during the World War, member of the staff of the East Side Hospital Toledo, aged 54, was killed, July 18, in an automobile accident

Edward A Scott, Galena, Md, University of Maryland School of Medicine, Baltimore, 1886, for many years chief judge of the Orphans Court of Kent County, aged 77, died, June 2, of carcinoma of the prostate and bladder

George G Corbet, St John, N B, Canada, McGill University Faculty of Medicine, Montreal, Que. 1898, fellow of the American College of Surgeons, orthopedic surgeon to St John County Hospital, aged 66, died June 8

Ignazio Cangialosi, Hoboken, N J, Regia Università di Bologna degli studi Facoltà di Medicina e Chirurgia, Italy, 1908, Eclectic Medical College of the City of New York, 1910, aged 53, died, July 7, of coronary thrombosis

Thomas James Dougherty ♂, Somersworth N H, Baltimore Medical College, 1894, formerly mayor of Somersworth, city and county physician, and secretary of the board of education, aged 67, died, July 4, of angina pectoris

Joseph D McKelvey, East Moline Ill, Rush Medical College, Chicago, 1895, member of the Illinois State Medical Society, aged 65, on the staff of the East Moline State Hospital, where he died, July 29, of heart disease

Raymond E Chase ♂, Glendale, Calif, University of Southern California College of Medicine, Los Angeles 1901, on the courtesy staff of the Glendale Sanitarium and Hospital, aged 57, died, July 13, of coronary thrombosis

Davis Breco, Ada Okla, University of Oklahoma School of Medicine, Oklahoma City, 1933, member of the Oklahoma State Medical Association, on the staff of Breco's Memorial Hospital, aged 36, was drowned, July 2

Pablo Gonzalez Jr, Glendale Calif, George Washington University School of Medicine, Washington D C, 1932, aged 28, resident physician on the staff of the Physicians and Surgeons Hospital, where he died, July 23

George Nelson Brazeau, Milwaukee, Northwestern University Medical School, Chicago, 1894, fellow of the American College of Surgeons, aged 64, died, July 13, in St Joseph's Hospital, of carcinoma of the rectum

Charles T Bronaugh, New Ross, Ind, Medical College of Indiana, Indianapolis, 1884, member of the Indiana State Medical Association, formerly county coroner, aged 82, died, July 23, of carcinoma of the throat

John M Prince, Miami, Fla, National Normal University College of Medicine, Lebanon, Ohio 1890, formerly a practitioner in Philadelphia, aged 77, died, June 21, of arteriosclerosis and cerebral hemorrhage

George Mogridge, Glenwood, Iowa, Omaha Medical College, 1894, formerly medical superintendent of the Iowa Institution for Feeble Minded Children, aged 80, died suddenly, July 22, of pulmonary hemorrhage

James Ward McKee, Los Angeles, Tulane University of Louisiana School of Medicine, New Orleans 1916, served during the World War, physician for the public schools in Glendale, aged 47, died July 16

William T Blanton, McCool, Miss, University of Tennessee Medical Department, Nashville, 1891, aged 69, died, July 14, in a hospital at Memphis, of leukemia, hypertrophy of the prostate and uremia

Archie Elmer Perkins, Fitchburg, Mass, Hahnemann Medical College and Hospital, Chicago 1889, member of the Massachusetts Medical Society, aged 71, died, June 14, in Gardner of pneumonia

Robert Yandel Shepherd, Taylorsville, Ky, Louisville Medical College, 1907, member of the Kentucky State Medical Association, aged 57, died, June 30, of encephalitis and acute dilatation of the heart

Joseph Omer Pichette, Montreal, Que., Canada, School of Medicine and Surgery of Montreal Faculty of Medicine of the University of Laval at Montreal 1893, aged 65, was found dead in his office, June 26

Samuel Cecil Slocum ♂, Portland, Ore., Cooper Medical College, San Francisco 1900, for many years member of the city health department, and county coroner, aged 60, died July 5, of heart disease

Leslie Ballard Evans ♂, Windsor, N C, University College of Medicine, Richmond, 1900, formerly state senator, aged 67, died, July 31, in the Tayloe Hospital, Washington, of cerebral hemorrhage

Giuseppe Romano, Cleveland, Regia Università di Palermo degli studi Facoltà di Medicina e Chirurgia, Italy, 1904, on the staff of St John's Hospital, aged 58, was found shot and killed, June 10

John Allen Underwood, Wilmar Ark, Memphis (Tenn) Hospital Medical College, 1908, aged 61, died, June 14, in a hospital at Little Rock, of cerebral embolism and chronic nephritis

John Henry Finnerty, Jersey City, N J, Bellevue Hospital Medical College, New York, 1884, formerly member of the city board of health, aged 80, died, July 11, of cardiac decompensation

Moses Duckman, Brooklyn, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894, aged 67, died, July 23, of coronary thrombosis and arteriosclerosis

John Benjamin Dudley, Bath, N Y, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877, aged 84, died, July 21, of chronic myocarditis and arteriosclerosis

Max Landower Rothschild ♂, San Francisco (licensed in California in 1897), medical director of the California Sanatorium, Belmont, aged 65, died suddenly, July 12, of heart disease

Stephen J Suwalski, Baltimore, Baltimore University School of Medicine, 1896, also a dentist, aged 77, died, June 24, in Catonsville, of chronic myocarditis and arteriosclerosis

John Francis Burns, New York, Georgetown University School of Medicine, Washington, D C, 1925, aged 36, died, July 31, in Thompsonville, Conn, of coronary thrombosis

Christopher J Colles, New York, Universität Heidelberg Medizinische Fakultät, Heidelberg, Germany, 1882, aged 77, died, July 9, in the Midtown Hospital of tuberculosis

Walter Allen Borland, Seattle, University of Oregon Medical School, Portland 1911, aged 62, died June 28, in the Columbus Hospital, of cardiovascular renal disease

Charles William Strobell, San Diego Calif, University of Vermont College of Medicine, Burlington, 1882, aged 78, died, June 25, of coronary thrombosis

Edwin Warren Bullock ♂, Somerville, Mass, Harvard University Medical School, Boston, 1886, aged 73, died, July 7, of a self inflicted bullet wound

William Blair, Ann Arbor, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893, aged 66, died, July 11, of carcinoma

John William Comfort, Kosciusko, Miss, Memphis (Tenn) Hospital Medical College, 1895, aged 67, died, July 12, of coronary thrombosis

Walter Augustus Reilly ♂, Naugatuck, Conn., Bellevue Hospital Medical College, New York, 1898, aged 60, died, June 3, of angina pectoris

Barton L Tupper, Glidden, Wis, Illinois Medical College, Chicago 1902, aged 66, died, June 22, of arteriosclerosis and myocarditis

John Pleasant Savage, Los Angeles, Miami Medical College, Cincinnati, 1878, aged 80, died, June 12, of coronary arteriosclerosis

Frederick Arthur Edwards, Omaha, Trinity Medical College, Toronto, Ont., Canada, 1901, aged 62, died, July 6, of appendicitis

Jesse E Scott, Kansas City, Mo, Eclectic Medical University, Kansas City, 1907, aged 61, died, June 3, of coronary thrombosis

Bureau of Investigation

THE THERMALAID QUACKERY

The Federal Trade Commission Orders the Electro Thermal Company to Cease False Claims

Toward the end of July, this year, the Federal Trade Commission issued a 'Cease and Desist Order' in the matter of the Electro Thermal Company, a quackish outfit that has for some years done business from Steubenville, Ohio. One W. J. Kirk is described as the president of the Electro Thermal Company. An earlier name for the Thermalaid was 'Electrothermal Dilator'.

The Thermalaid was essentially a rectal dilator consisting of a hard rubber unit to be inserted in the rectum for the application of heat. The heating element was produced by an electric current, and two forms of the device were sold, one to be activated by the electric-lighting current and the other by means of a battery where a lighting circuit was not available.

The Thermalaid has been advertised and sold under the claim, either expressed or implied, that it would cure prostatic hypertrophy and diseases of the prostate. It has also been recommended as a cure for constipation and hemorrhoids (piles) and by implication, as a sexual rejuvenator.

Wm. J. Kirk, the president of the Electro Thermal Company, is not a physician. Victims were obtained by the methods common to mail-order quacks: that of advertising in such newspapers and magazines as are willing to split the profits of quackery with takers of this type. Advertisements of the Thermalaid in the files of the Bureau of Investigation collected during the past few years have come from such publications as:

Physical Culture
Los Angeles Times
Kluwan Magazine
Popular Mechanics
Detroit Mirror
Police Gazette

True Story
Real Detective
Popular Stories
Correct Eating
Strength
Modern Living

The advertising has also carried the usual number of testimonials. One that was featured extensively was that of Dr. C. Herbert Johnston of Chicago. Dr. Johnston, according to the records of the American Medical Association, was born in 1851 and received an Illinois license in 1885 on the basis of a diploma dated the same year that he claimed to have received from the Physio-Medical Institute of Cincinnati. The diploma could not be verified, for the Cincinnati institution went out of existence the same year that it issued the diploma. While the advertisements would lead one to believe that Dr. Johnston was a prominent physician and especially qualified in the urologic field, the fact is that he is practically unknown to scientific medicine. Records in the files of the American Medical Association indicate that Johnston was once 'vice-president' of a low-grade so-called medical school that operated in Chicago. He also appears to have been a disciple of the late Dr. Albert Abrams, the dean of American quackery.

The names of two other physicians are given as having testified to the alleged virtues of the Thermalaid. One of them who was born in 1861 and died in 1934, received his medical diploma in 1883. In addition to giving a testimonial for the Thermalaid, he also endorsed the 'Magic Dot' rupture-cure quackery put out from Steubenville and debarred from the mails in the spring of 1935.

The other physician was born in 1868 and received his medical diploma in 1891. Whether the man is still alive, the records of the American Medical Association fail to show, as it has been impossible to trace his address since 1922. The files of the Association do indicate, however, that at one time the man was connected with a quackish outfit of the 'men's museum' type in an eastern city and at another time had some connection with the Electro-Medical Scientists operated by the notorious Ward in New York City. Still later it was reported that he had entirely given up the practice of medicine either reputable or disreputable and had gone into the theatrical business.

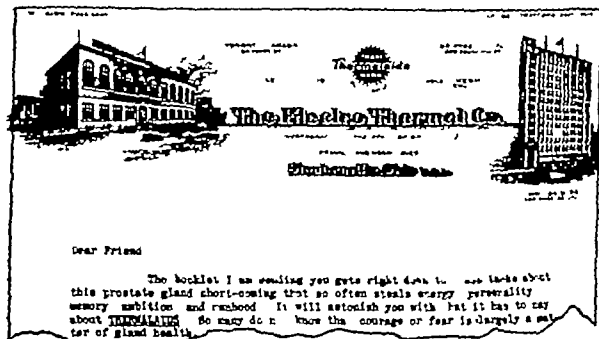
As has been so often detailed in this department of THE JOURNAL, some highly respectable banking institution was used by the Electro Thermal Company to bolster this piece of

quackery. According to the Thermalaid advertising the following individuals, as officers of certain banks, were pleased to "testify" to their "own good opinion of the integrity, responsibility and business ability of the Electro Thermal Company." That the company was financially responsible and had business ability might readily be admitted, but does the exploiting of a quack device under false and misleading claims constitute these gentlemen's idea of "integrity?" The persons and institutions named at the end of this testimonial are:

H. M. Cattell, Treasurer of the Union Savings Bank & Trust Company
A. G. Lee, President of the Steubenville Bank & Trust Company
L. L. Crimes, Cashier of the Peoples National Bank
George J. Barthold, Secretary of the Miners and Mechanics Savings & Trust Company
W. H. McClinton, President of the National Exchange Bank & Trust Company

There was also published among the testimonials one from a Mr. Rawley W. Holcombe who was alleged to have been the manager of the Steubenville Chamber of Commerce in 1928. Mr. Holcombe opined that the "growth and development" of the Thermalaid quackery proved conclusively that it had rendered a real service to many people and therefore Mr. Holcombe would "gladly substantiate" what the concern had "done for humanity!" Other testimonials allegedly from physicians were published, but without any names or addresses.

Part of the advertising ballad of the Thermalaid was the "gift" to purchasers of the device of a booklet entitled 'The Male Motor.' This was said to be by "Dr. M. Sayle Taylor



Sc.D., Ph.D., Sexologist." M. Sayle Taylor was the subject of an article in this department of THE JOURNAL March 12, 1932. Since that article appeared, M. Sayle Taylor has been much in the public ear over the radio as 'The Voice of Experience.' In the Bureau of Investigation article it was brought out that M. Sayle Taylor was at that time appearing in motion picture theaters in connection with films of an erotic character and at other times gave "stage presentations" in which he used "living models" and "human charts." The Chicago Tribune, in writing up one of Taylor's appearances in a local theater, stated that Taylor's "message is so appallingly crude and nastily nauseating that at first the stronger stomachs of the audience are inclined toward lusty laughter. However, they gradually succumb to the wizardry of his eloquence, until, at the end they are whipped into a frenzy of morbid sensationalism." At that point said the Tribune reporter, M. Sayle Taylor's high-powered salesmanship came into action, and he had for sale three paper pamphlets "dealing with the mating instinct and other problems appertaining thereto which were sold all for one little dollar bill." The pamphlets were passed through the audience, according to the Tribune's report, not by ushers but by "usherettes of apparently immature years."

Two subsidiary pieces of quackery have also been exploited by the Electro Thermal Company. One was a so-called medicated lubricant rejoicing in the name of "Iktlin" and sold for \$1.25 a tube, the other as might have been expected was an alleged vitamin concentrate sold under the name "Sun Mettle—Double 20 Formula" at \$5 a jar.

The Federal Trade Commission has ordered that the Electro Thermal Company cease and desist from making such claim either through the use of testimonials, newspaper or magazine advertisements, radio advertising, etc., as "That 75 per cent of all men past middle age have prostate trouble." That the Thermalaid is a positive cure for this ailment." That the

Thermalaid "constitutes a competent treatment or cure for prostatitis" or for hypertrophy of the prostate or for constipation or hemorrhoids. Various other false claims that have been made by the Electro Thermal Company the Commission has ordered shall no longer be made.

While those who realize the pernicious character of the business of the Electro Thermal Company congratulate the Federal Trade Commission in having done a public service in issuing a Cease and Desist Order, one can but regret that this business, which is carried on wholly through the United States mails has not long before this been debarred from the use of the mails by the issuance of a fraud order.

Correspondence

VOCABULARY OF PHYSICIANS AND APTITUDE TESTS

To the Editor—Flack, discussing "Aptitude Tests for Medical Students" (THE JOURNAL, July 4 p 61), mentions various factors that have turned the attention of the officers of medical schools toward the possibilities of aptitude tests in solving their problems. The tests employed include a scientific vocabulary test. Yoakum (reported by Twitchell, D F. Report of Data Pertinent to the Problem of Selection of Medical Students J 4 Am M Coll 6 357-361 [Nov.] 1931) has experimented with an exclusively vocabulary and reading test in an endeavor to predict the success of students in later medical studies. After

Terms Encountered in Garrison's History of Medicine

adumbrated	theurgy	eidetics
heuristic	lathyrism	crannogs
ephors	palimpsest	orotund
prolegomena	synectic	snaffle
iconography	proegumemic	geriatrics
ethnec	procatartec	pithiatism
couvade	synochal	campitocormy
runic	farricary	corroval
bulbo	patristic	vao
totemic	emir	latah
apotropaic	mage	myrmachit
omophagy	adscript	megrims
chthonian	farago	semantic
hieratic	marano	autochthons
vulnerary	redecraft	ichorion
obsidian	hodegetics	porrigo
piebald	creese	hydroa
piacular	ficive	whiffing
syncretic	relendary	telegony
basilisk	filigranes	heterosis
dicoric	deontology	bionomic
grigris	carricks	euthenics
scopeliam	energumen	phenotype
phylacteries	osier	demiurge
peruaps	tritych	espahier
mantra	mascacon	trephones
estray	electuary	cy clopia
runes	reiver	nimbus
gamy	flagitious	metaxenia
demotic	pelisse	culicidal
stela	paracutic	atrepsey
withes	hexoar	ecology
antinomies	ordure	syzygiology
sinology	corenage	moxa
steatopygou	apozeme	recusant
faience	centupled	plunth
sherd	avator	charades
anomic	vectis	pythogenic
uranic	choreographic	pythones
polonaise	zany	gambit
esoteric	mephitic	gerundive
hilaric	panada	thorama
laic	hurin	thuggee
metempsychosis		lacioity

describing the results obtained thus far in a number of medical schools, Flack concludes that the aptitude tests have gone a long way toward solving the problem of selecting applicants to medical schools. Wechsler states that contrary to what one

would expect, the vocabulary test is one of the best tests of intelligence. In fact, it correlates more highly with mental age than any other single test on the Binet-Simon scale. In scoring the responses, elegance of definition is disregarded; any correct meaning is acceptable. (A Textbook of Clinical Neurology, ed 3, 1935)

If vocabulary is to be a measure of intelligence for future physicians, Garrison pays a graceful compliment to the medical man of this generation in his celebrated History of Medicine. In this great work one encounters all the words listed in the accompanying tabulation, in the order in which they are given here. Will not every physician on meeting these familiar terms in his leisure reading feel a glow of self assurance and gain confidence that, had aptitude tests been applied in his student days he would have scaled over them with the greatest of ease?

JOSEPH NASH M.D. New York

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DETERMINATION OF CARBON MONOXIDE IN AIR

To the Editor—What is the best practical method of testing the carbon monoxide content of a room? I have a patient whose room on the third floor opens toward a narrow alley in the open rear of a commercial garage. He seems to be affected by the gas. What percentage of carbon monoxide would be considered injurious? Please omit name. M.D. Louisiana

ANSWER—There are several methods of analysis by which small amounts of carbon monoxide in air can be determined accurately, all, however, necessitate elaborate apparatus or involve refined analytic procedures. The most practical measure under the circumstances is to examine the patient's blood for carbon monoxide hemoglobin. The blood sample should be drawn after the patient has had maximum exposure and while he is still in the contaminated air. Most of the carbon monoxide will leave the blood during two hours in fresh air. The percentage of carbon monoxide hemoglobin can be estimated conveniently by the method described by R. R. Sayers and W. P. Lant (Method for Determination of Monoxide in Blood and Air, U. S. Bureau of Mines, 1925, Technical Paper 373 abstracted in Peters, J. P., and Van Slyke, D. D., Quantitative Clinical Chemistry (Methods), Baltimore, Williams and Wilkins Company, 1932). Their procedure can also be used to make a fairly accurate approximation of the carbon monoxide in the air of the room. A red cell count is also recommended, as the assurance of a polycythemia will give further indication of chronic exposure to carbon monoxide.

One part of carbon monoxide in 10,000 parts of air is considered the maximum permissible concentration for prolonged exposure. But the percentage of carbon monoxide hemoglobin in the blood of the patient is a more significant value. If it exceeds 10 or 15 per cent, some physiologic effects may be observed.

PRESERVATION OF HUMAN IMMUNE SERUMS

To the Editor—I am prepared to make serums from convalescent scarlet fever cases but would like your opinion as to the proper preservation and how long this may be kept in refrigeration. I should like any further information that you may give me on this subject. Kindly omit name.

M.D. New Mexico

ANSWER—Four-tenths per cent phenol or tricresol has been used for many years for serums generally. This amount is recommended by the U. S. Public Health Service. The preservative is mixed with an equal part of ether before addition to the serum. Merthiolate and metaphen have been used, usually in a concentration of 1:5,000. Other organic mercurials may be employed. Some have the disadvantage of adding some color to the preparation. The National Institute of Health requirements specify nine months from date of preparation to expiration when the serum is kept constantly at 0-4 C. Utmost aseptic precautions during processing and adequate sterility tests both

on the individual samples and on the final pool of serum, are essential. It would be advisable to follow rigidly the requirements of the National Institute of Health in the preparation of human immune serums.

TREATMENT OF MENINGITIS

To the Editor—Following is a report of a case of cerebrospinal meningitis with a fatal outcome. I will appreciate your criticism of my plan of therapy and any suggestions you may have to offer. I first saw the patient a youth aged 17 years July 4 at 5 p. m. He had been ill with severe headache for four days. His neck had been sore stiff and acutely retracted since the morning before about thirty hours. I immediately did a spinal tap at which time 45 cc. of cloudy spinal fluid was gradually allowed to drain. Thirty cc. of Mulford's antimeningococcus serum was introduced into the spinal column by the gravity method. Also 30 cc. was given intravenously. The conjunctival test for sensitivity was previously carried out and was apparently negative. At this time the patient's temperature was 103 the pulse 120 the spinal fluid cell count 2350. He was rational. On the morning of July 5 a spinal tap was again done and 40 cc. of fluid was withdrawn 25 cc. of Mulford's serum given intraspinally and 20 cc. intravenously. That night ten hours later 30 cc. of serum was given intravenously and 15 cc. intramuscularly. By the next morning July 6 I had been able to secure meningococcus antitoxin of which I had read and approved. A spinal tap was done and 40 cc. of spinal fluid was withdrawn and 20 cc. of antitoxin Parke Davis & Co. was given intraspinally and 40 cc. intravenously. At this time there had been no noticeable change in the patient's condition since I first saw him. The case appeared hopeless. Ten hours later he received 60 cc. of antitoxin intravenously. A spinal tap was done the morning of July 7 45 cc. being obtained and 60 cc. more antitoxin being given intravenously. Ten hours later 60 cc. more was given intravenously. I had not as yet noticed any appreciable change in the patient's condition. The morning of July 8 I found the patient free of headache his neck was not nearly so stiff and he could move it about 15 degrees without pain. He said he felt all right. His temperature was 101.5 the pulse 104. A spinal tap yielded 40 cc. of fluid 60 cc. of antitoxin was given intravenously. He appeared better. Ten hours later 30 cc. more antitoxin was given intravenously. The morning of July 9 a spinal tap yielded 35 cc. of fluid and 30 cc. of antitoxin was given intravenously. A cell count of the spinal fluid was 900. The patient was much improved. Ten hours later 30 cc. of antitoxin was given intravenously with the patient still improved. The morning of July 10 the patient could move his head about 40 degrees. He had no complaint and no headache. His neck felt all right there was no delirium and he had been resting and sleeping well. It seemed to me that he would recover. As a prophylactic measure against reaction I had been giving him 0.5 cc. of 1:1000 epinephrine hydrochloride subcutaneously prior to each intravenous injection both of serum and antitoxin. The patient had had morphine sulfate one fourth grain (0.016 Gm.) when needed for pain or restlessness from the beginning which averaged about every six hours. The morning of July 10 his temperature was 100.5. He was in good spirits there was no headache the neck was more relaxed than ever and I felt that recovery was imminent. A spinal tap yielded 30 cc. of fluid 30 cc. of antitoxin was given intravenously. About one hour after I left the patient he became sleepy and cyanotic and wished to be fanned as fast as possible. According to his nurse he fell into a restless sleep breathing became deep and labored and he died one and one-half hours after I gave him his last dose of antitoxin. I am asking you to review this entire case closely and to give me a detailed report on what you believe to have caused the patient to die. He was getting better by every criterion by which I know to gauge such a case. I know of no reason for such a sudden death. Previously I have treated five cases of meningococcal meningitis. They were treated with the serum and three of the patients lived. I have never been so surprised or disheartened at the outcome of such a case as I was with this one. Please criticize my therapy closely. If you can enlighten me as to my shortcomings in treating this case or give me any information that might be of benefit in treating subsequent cases I shall be grateful.

M D Tennessee

ANSWER—It is apparent that the patient received good treatment. It seems probable that death was due to either pulmonary embolism or pulmonary edema. Such accidents have been known to occur in connection with the treatment of patients by the intravenous route.

The following suggestions are offered for treating meningococcal patients. Administer meningococcus antitoxin or antimeningococcus serum should you prefer the latter remedy, in larger doses intravenously. Usually 100,000 units of the antitoxin or 200 cc. of antimeningococcus serum is not too much for an initial dose which may possibly consist of all that is required. The remedy however when given intravenously should be diluted in approximately twice its volume. For a diluent, 10 per cent dextrose in physiologic solution of sodium chloride has been found to be satisfactory. To this mixture from 0.6 to 1 cc. of epinephrine should be added. The mixture is administered slowly at body temperature by the gravity method.

Hovne believes that meningococcal meningitis patients respond more satisfactorily to intravenous treatment when there is no intraspinal medication. Lumbar punctures may be made when

deemed advisable for the purpose of relieving pressure and checking on the progress the patient is making as a result of intravenous therapy.

Some clinicians with broad experience in the treatment of meningococcal meningitis are strongly opposed to the use of morphine for patients with such infections. As a matter of practical observation it has been noted that meningococcal meningitis patients who are given morphine do not always progress well. It is possible that morphine in these cases increases cerebral edema. Some other sedative is preferable.

PREVENTION OF IMPOTENCE

To the Editor—I have had under observation a man, aged 21 Jewish, whose main complaint is sluggishness in obtaining an erection under conditions of sexual excitement. He says that if sufficient erection is secured for insertion he has a premature orgasm or none at all. If the sexual act is repeated the conditions of his sexual lag or precocity assert themselves and the act is practically normal. Examination reveals evidence of a mild hyperthyroidism—palpable gland very slight tremor emotional instability continuously sweating warm hands weight loss of 10 pounds (4.5 Kg.) pulse from 90 to 100 blood pressure 140 systolic 85 diastolic ruddy face and a basal metabolic rate of plus 15 and plus 10. His appetite is good but not ravenous and he states that he does not have heart consciousness. The prostate and external genitalia are those of a healthy male. The urine is cloudy with phosphates (heavy) but is otherwise negative. Blood examination reveals 100 per cent hemoglobin 5 050 000 erythrocytes and 9 600 leukocytes. The differential count is normal. The semen has not been studied. Other physicians have given him prostatic massage and testicular extracts he had a course of aututrin S consisting of twenty 1 cc. doses with subjective decrease in nervousness weight gain pulse reduction to 80 and blood pressure fall to 125/75 (weekly readings). He was given iodine after the aututrin course which further decreased his nervousness and decreased the sweating. The sexual complaints persist. I recently had occasion to see a second patient complaining of almost the same sexual difficulties including the improvement on repetition of the sexual act. This man had a pronounced hyperthyroidism. Thyroidectomy is obviously indicated in the second case but the symptoms in the first case are mild so far as the thyrotoxicosis is concerned and one hesitates to advise surgery on the thyroid from that angle per se—the patient primarily wants relief from his sexual difficulties. The psychic element must be weighed in relation to his sexual complaints and this thyroidectomy might or might not improve. I am open for suggestions and advice. Please omit name and address.

M D., Illinois.

ANSWER—The history given is the usual one in cases of oncoming impotence, namely, first rapid ejaculation then premature ejaculation, and finally more or less inability to obtain any erection at all. Although the statement is made that the prostate feels normal, in many of these cases an examination of the prostatic urethra with the cysto-urethroscope will reveal more or less congestion, especially about the region of the verumontanum, which may or may not be enlarged. It is not necessary to find gross pathologic change in the prostatic urethra, such as tumors, as the congestion just referred to is amply sufficient to cause the symptoms. No local anesthetic should be employed, as this might mask the congestion. The etiologic factor most often found is the indulgence in ungratified sexual excitements, such as excessive spooning with artificial holding back of ejaculation. On account of the marked congestion in the prostatic urethra, the reflex act of coitus takes place almost at once or soon after the increased congestion of sexual excitement. After this condition has lasted some time the muscles and nerves and nerve centers connected with the sexual act become exhausted and erection fails or is very incomplete.

Orchic extracts as well as aututrin-S can have no effect in these cases, as even normally they have no influence on the process of erection and ejaculation. For the same reason the examination of a condom specimen, while interesting for other reasons, cannot give information regarding the process of erection or ejaculation.

The treatment consists in first getting rid of the local congestions before starting any stimulating treatment. It is also absolutely important to interdict spooning or other ungratified sexual excitements. The prostate should be gently massaged and instillations of weak silver nitrate solutions (from 1:3000 and 1:500) should be given into the prostatic urethra with the Bangs sound syringe about every five days. Generally in about six treatments the congestions are removed and often the patient is well. If not, however, this shows that the muscles and nerves have been weakened, and stimulating treatment is in order. For this purpose the sinusoidal-faradic current of moderate rapidity and as strong as the patient can bear without any pain has been suggested. One cable is connected with a rectal electrode and the other with a wet sponge electrode applied to the perineum and the current allowed to pass for about ten minutes. Treatments may be given every four days.

TREATMENT OF MENSTRUAL IRREGULARITY
AND STERILITY

To the Editor—A woman aged 23 complains of menstrual irregularity and secondary sterility. Her periods began at 13 years of age and were always regular until a year after her marriage at which time she had a spontaneous miscarriage at about two or three months pregnancy. No fetus was found but a piece of (or the entire) placenta was extruded and examined microscopically and found to be normal. Since this time for the past year her periods have been irregular varying from forty to seventy days apart. Despite lack of attempts at contraception she has not become pregnant though she is very eager to do so. She is 62 inches (157.5 cm) tall and weighs 145 pounds (66 Kg). A thorough physical examination yields no clues as to the possible reason for her menstrual disturbance or secondary sterility. I have used amniotin theelin and progynon B repeatedly and frequently with no other effect than that of slightly clearing her mild acne. For a basal metabolism rate of minus 11 I have used 1 grain (0.65 Gm) of thyroid twice a day for a period of three months with no effect on the pulse rate or weight. A rigid low calory high protein diet with 3 mg of thyroxine hypodermically twice a week has also done nothing to her weight. There is a tendency to girdle distribution of fat with heavy thighs. A Hubner test shows that her vaginal secretions quickly (one hour) kill the spermatozoa of her husband despite the fact that these are very numerous motile and by themselves long living (thirty hours on a glass slide rimmed with petrolatum and at room temperature). There is a strong libido and desire for impregnation. The secondary sexual characteristics are very well developed. At the present time she has not had her period for seventy four days and is nauseated but does not vomit. The Friedmann test is negative and examination does not even lead me to be suspicious of pregnancy. I am at a loss as to what to do in this case and would greatly appreciate any suggestions you may have to offer. If you print this letter will you please omit name? M D New Jersey

ANSWER—There are cases in which after a miscarriage a curettage is performed too radically with the result of entirely destroying the endometrium, resulting in amenorrhea and sterility. There is, however, no mention of such an operation in this case. In the absence of such a history it must be concluded that the condition is endocrine in origin. There are many factors in the history which distinctly point to such a diagnosis. The death of the spermatozoa within the vagina in an hour does not indicate anything wrong, as this condition is frequently found in normal cases. It is more important to note whether the spermatozoa reach within the cervix and remain alive there or are killed there or are stuck in the cervical mucus as this is the main diagnostic significance of the Huhner test.

Treatment should be directed on endocrine principles but is still wholly experimental. Most standard preparations state the number of rat units contained. They should be given in fairly large doses. In addition, an outdoor life with plenty of sunshine is indicated.

PAROXYSMAL TACHYCARDIA

To the Editor—A business man aged 37 has had repeated attacks of paroxysmal auricular tachycardia for thirteen years with increasing frequency now they occur about once or twice a month. They are ushered in suddenly and violently the pulse and apical rate rising to about 200 per minute. These last from two to three hours and are terminated by induced vomiting. Vagal or orbital pressure has no effect. The Wassermann reaction is negative. The patient has an aortic and mitral insufficiency with percussable cardiac enlargement. The cardiac reserve determined by exercise is low. Compensation is still established. Would you advise quinidine sulfate in the presence of this endocarditis? Would you advise choline? How is this administered? Would you give digitalis concomitantly or previous to quinidine medication? Quinidine 3 grains (0.2 Gm) three times a day does not help. Should I increase the dose? Please omit name? M D New York.

ANSWER—It is assumed that this case with a negative Wassermann reaction is one of rheumatic origin. Lesions causing aortic regurgitation are less apt to create disturbances of rhythm than those of the mitral endocardium. A postmortem examination of hearts in cases of mitral stenosis makes this easy to understand. The onset of paroxysmal tachycardia in a patient who has had rheumatic fever and who subsequently shows merely a systolic mitral murmur should make one very suspicious of mitral stenosis. It has been the experience of many that the intervals between attacks of paroxysmal tachycardia tend to shorten until, as Lewis pointed out some years ago one comes that persists in spite of all our efforts.

Digitalis or quinidine sulfate may be used during the intervals. These drugs should be tried separately, giving the first place to digitalis which may be used at the rate of 0.1 Gm a day over a period of several months and the dose can be varied according to the effect on the cardiac rate. It is more valuable than quinidine sulfate, which may be tried if digitalis is unsuccessful. The patient has been given quinidine and since he tolerates it well it may be administered in larger daily doses. Quinidine when well borne may be given for auricular fibrillation or auricular paroxysmal tachycardia up to 1.8 Gm a day for three or four days, after which the patient might take 0.2 Gm two or three times daily. The usual precautions with

regard to the use of quinidine in cases of long standing disturbances of auricular rhythm must be regarded. Quinidine has small value in stopping an acute attack.

Stiepp and Schliephake in 1925 reported full and almost instantaneous control of paroxysmal tachycardia by using 0.5 cc of a 5 per cent solution of choline chloride intramuscularly. More recently this drug under the name of Mecholin (Merck) has been strongly recommended for intramuscular injection during the attack. It comes in dry ampules of 0.025, 0.1 and 1 Gm. Calcium gluconate has recently been used during the attacks. It comes in 10 cc ampules, which may be injected into the muscle. It has also been given in the intervals in wafers of 1.5 Gm each, which the patient can use himself. It is interesting that the patient's attacks cease with induced vomiting. One cardiologist uses only ipecac to induce vomiting and in that way ends the acute attack. Lunigo many years ago advised emetine for the same purpose.

PELVIC ENDOMETRIOSIS

To the Editor—An unmarried woman aged 38 who weighs 120 pounds (54 kg) is 5 feet 7 inches (170 cm) tall and whose parents, brothers and sisters are healthy and normal has taught school most of her life since graduation and her habits are excellent. The menstrual period began at 13 occurs every twenty-eight days and lasts from five to seven days. On the first few days it is always very free. Twelve years ago she had an acutely inflamed appendix removed. Recovery was uneventful. She had no serious illness, accidents or other operations until eight months ago. About five years ago she began to have pain in her right shoulder. The pain appeared the first day of the menstrual cycle, the second day was better and at the end of the cycle appeared again and lasted from seven to ten days and was very severe. This pain has increased in severity until now it almost incapacitates the patient. The pain radiates around the region midway of the clavicle and first rib. The patient describes it as being pain deep in. At no other time of the month does this bother her. Headache usually accompanies the pain. Eight months ago on examination it was found that she had a mass in each side of the pelvis, the uterus was firmly fixed. At operation it was found that each ovary had undergone cystic degeneration and tumor formation. The tumor was filled with a chocolate bloody substance, smilud in character. The same trouble had affected the ovaries and most of the ovarian tissue was destroyed and it was hard to eradicate the tumor and contents and leave any ovarian tissue. However this was done and the patient has. I think her usual amount of ovarian substance. At that time a subtotal hysterectomy was done because of some small fibroids on the uterus. All the uterine tissue possible was left. Now at each menstrual period the patient menstruates a very little with no pain or cramping which was present before. However she has the same unusual annoying pain in her right shoulder and so far as I can see the pelvic condition is corrected. The patient has never impressed me as typically neurotic. Her teeth are good and the tonsils are gone. There is no evidence of infection around the head any place. The urine is normal. The Wassermann reaction is negative. Her vision is good. There is no other evidence of a pathologic condition any place in her body. The unusual feature about this case is the persistent pain in the shoulder with the accompanying headache which pain and headache appear at the end of the period and last for seven or ten days. I would appreciate some reference data or other information which you no doubt will be able to give. M D Arkansas

ANSWER—This patient evidently had pelvic endometriosis and some of the disease may still persist. As is often the case, there were associated uterine fibroids.

In the presence of extensive pathologic change, such as here described, radical surgery is usually required to effect a permanent cure. If the endometriosis is extensive and the ovaries are not removed, the disease tends to progress, slowly but continuously, until after the menopause. With complete removal of both ovaries all endometriomatous lesions atrophy and disappear. (References: Sampson, *The Life History of Ovarian Hematomas of Endometrial Type*, *Tr Am Gynec Soc* 1922, pp 47-56; Keene and Kimbrough, *Endometriosis*, *Obstetrics and Gynecology* edited by Curtis, Philadelphia W B Saunders Company 3 338, 1933.)

Gaseous distention of the bowel or free gas in the peritoneal cavity (such as occurs at the time of transuterine insufflation of the fallopian tubes) is the most common cause of shoulder pain. In this case, pelvic adhesions with flatulence probably cause the right shoulder pain.

Discomfort is often more pronounced in such patients at or near the time of menstruation because the patient is at low ebb at such times is more sensitive to pain, and is then more disposed to constipation and abdominal distention.

When the shoulder pain is acute, immediate temporary relief may be obtained by assuming a recumbent position, with the head lower than the pelvis.

Dietetic measures directed to the relief of flatulence are indicated. The patient should eat slowly and temperately and should avoid rough foods, candy, pastry and potatoes. Elimination from the bowels should be free.

PAIN IN SPINE AFTER SPINAL ANESTHESIA

To the Editor—A woman aged 32, of a highly neurotic nature, had a major abdominal operation about fifteen years ago for double salpingitis and removal of the appendix. She made a rather poor recovery in a nervous way and complained of abdominal distress following this operation yet general examination revealed but little concerning her physical condition other than a marked neurosis. About five years later she was operated on again in another town and I have not been able to find out definitely just what was done at that time but her symptoms of general neurosis obstinate constipation dysmenorrhea and complaint of general discomfort continued the same, yet her general physical appearance during all this time was that of a well nourished rather obese individual. No laboratory examination revealed any definite pathologic change. In June 1934 she was sent to a charity hospital for general examination and such treatment as was indicated. The laboratory and roentgen examination made there revealed nothing of consequence but she was operated on under spinal anesthesia and many abdominal adhesions were found and removed. (From such information as I have been able to get I think this was principally what was done at the time of the second operation.) She reports that immediately after the effect of the anesthesia passed off she began to have considerable pain about the region of the second and third lumbar vertebrae. (She was complaining much of this pain when she came home from the hospital two weeks later.) This pain has continued to date and she pretends to have much tenderness on pressure at about the region of the second and third lumbar vertebrae and says that the pain refers down the posterior and outer surface of each thigh also that the pressure on the lumbar region mentioned increases the pain in her head. The question in my mind is Did the spinal anesthesia create a fibrosis of the cord that is making the pain or is this a generalized neurosis? I would appreciate your opinion and especially the suggestion of a treatment; as I have been unable to accomplish much in the way of relief of the patient.

M D Nebraska

ANSWER—Probably the diagnosis of neurosis, made fifteen years ago, is correct. Without any evidence of definite neurologic manifestations it is most unlikely that one could be dealing with fibrosis of the spinal cord. Spinal anesthesia probably had no specific effect on the present complaint but the reaction is one that is frequently seen in cases of this type following any surgical procedure. The question of treatment is a difficult one and the decision must depend entirely on the intelligence of the patient and on her cooperation with the physician. One of two courses might be pursued. Either her problem might be frankly discussed with her, causing her to realize the nature of her trouble, or she might go to a good sanatorium or some institution where cases of this type are often successfully treated. This patient represents a type of case in which it is well to avoid the use of a spinal anesthetic, because frequently the patient complains afterward about any one of a number of things, even resenting the fact that consciousness was maintained during the operation. There was no mention of trauma during the administration of the spinal anesthetic, which in itself might become a factor that could have a bearing in such a case.

HYPERTENSIVE DISEASE AND PREGNANCY

To the Editor—For the past year I have been taking care of a woman aged 34 with a marked hypertension ranging from 200 to 230 mm of mercury systolic and from 130 to 140 diastolic. About eight months ago she miscarried a five months pregnancy and thereafter for a few months felt a great deal better her blood pressure falling to 180 systolic and 110 diastolic. Her headaches have been greatly relieved by correction of a refractive error and treatment of a sinus condition. I have prescribed phenobarbital and theobromine-phenobarbital and have also used bismuth subnitrate in the recommended doses with no effect on the blood pressure. I have doubts as to the value of the hypotensive drugs and have not used them consistently. There does not appear to be kidney damage or myocardial insufficiency as yet. Can you suggest a rationale of treatment? What would the prognosis be? Would repeated venesections be of value? Please omit name.

M D Pennsylvania

ANSWER—It is not clear from the query how severe a hypertension existed prior to the patient's pregnancy. If the diastolic tension had been persistently in the neighborhood of 110 to 120 prior to pregnancy the patient should not have been permitted to go on to the almost inevitable miscarriage at five months. It has been emphasized repeatedly (Adair, F. L. and Steglitz, E. J. *Obstetric Medicine*, Philadelphia: Lea & Febiger, 1934, chapters XXII and XXVIII) that pre-existent hypertensive arterial disease and/or nephritis are invariably greatly exacerbated by pregnancy and that this exacerbation persists permanently. The longer the pregnant state continues the more severe and irreparable is the permanent damage. Unquestionably this is just what occurred in the present instance there being a transient incomplete diminution in the intensity of the hypertension because of the release from the intoxications incident to the pregnancy. It is doubtful whether any medication will prove of much value here, for it is probable that in this instance arteriolar sclerotic changes have already occurred and such damage is irrevocable, irreparable and nonamenable to therapy. The vasodilator drugs are too mild to overcome the

intense intoxications responsible for the hypertension. It must be emphasized that the high blood pressure per se is but a symptom of this intoxication. Bismuth subnitrate and the barbiturates are ineffective in the presence of such active etiologic irritation.

Pregnancy causes a great change in the character of hypertensive arterial disease. A slowly progressive, relatively mild disturbance becomes rapidly aggressive and destructive. Qualitatively the disease is unaltered but quantitatively it is tremendously accelerated in its course. The youth of the patient also tends to more rapid progression or "malignant hypertension."

The query states that "there does not appear to be kidney damage or myocardial insufficiency as yet." One may probably take this to mean that the patient has no cardiac embarrassment or failure and that the urine is relatively free of protein and casts, but it is unjustified to say that there is no renal or cardiac impairment. In hypertensive arterial disease there is a long period of gradual reduction of the functional reserve of both the heart and the kidneys. It is a justified clinical concept to assume that such injury occurs invariably. Study of the renal functional reserve, especially with the test procedures that involve stress, such as the renal concentration test and the urea clearance test, would most certainly reveal considerable reduction of the renal reserve. So long as the renal efficiency suffices to care for the daily and usual requirements, there will be no true renal symptoms or hyperazotemia, but a great depletion of the margin of safety must occur before such compensation. Such lowered reserve is essentially asymptomatic. The query gives no clue as to the possible etiology of the original hypertensive disease and the nephritis, which may be assumed to have existed prior to the tragically unfortunate pregnancy. For this one must dig carefully and thoroughly into the past history of the patient. The nephritic sequelae of scarlet fever often remain "latent" and unsuspected for years to appear later as a severe renal failure or "uremia." This was recently emphasized by F. D. Murphy, John Griff and G. I. Movon (Acute Diffuse Glomerular Nephritis, *Arch. Int. Med.* 54: 483 [Oct.] 1934).

The prognosis is bad. The life expectancy is but a few years. Therapy of many kinds has proved of little avail. Repeated venesections are decidedly contraindicated. It is more than probable that this patient has developed or will develop the highly resistant form of secondary anemia characteristic of nephritis. Repeated transfusions would be more in order although the benefit from them is but transient.

INDUCTION OF PREMATURE LABOR

To the Editor—Kindly discuss induction of premature labor from the standpoint of indications. A primipara, aged 21 with excellent personal and family history had a perfectly normal pregnancy except that the weight gain was about 35 pounds (16 Kg.) from 129 to 164 (58.5 to 74.4 Kg.). Her height is 5 feet 7 inches (170 cm.). The breech position was diagnosed by the usual means and roentgen examination. There were pressure symptoms—shortness of breath and a tight feeling rather much in evidence but decreased about a week before the date of the expected delivery. Eight days before the calculated date for delivery labor was induced. The patient went to the hospital the same morning and delivery was accomplished by 6 p. m. A small tear necessitated one stitch. The mother's condition was excellent at all times during delivery and has been since. No instruments were used. The mother has no remembrance of labor. The child weighed 9 pounds 13 ounces (4.450 Gm.). It was born blue and did not breathe for half an hour. Then it breathed only periodically and as the result of much effort by attendants. Stimulants, artificial respiration, insufflation and carbon dioxide and oxygen were administered. It lived about thirty-six hours. Autopsy showed laceration of the superior longitudinal sinus as the cause of the condition following birth and of death. Is it considered good practice nowadays to induce labor prematurely in breech presentations when breech position is the only abnormality? If so how long before the calculated date of delivery? Kindly omit name.

M D California

ANSWER—The indications for the induction of premature labor have changed a great deal as the result largely of the increased safety and incidence of cesarean section. There are some who have advocated and do advocate the induction of labor on a predetermined date but such a routine indication is not generally accepted by obstetricians. As a rule the present day indication for inducing premature labor are maternal rather than fetal and include such conditions as toxemia and placenta praevia which threaten the mother's life.

An induced labor is not a normal labor though it may be so essentially if the time of induction is at term. Consequently the risk to the mother is greater and the fetus is exposed to added hazard which is increased with the degree of prematurity. In the case cited the child was very large which also increased the risk, especially with a breech position in a primipara.

woman. The parturient canal must have been ample to permit of the delivery of such a large fetus without operative intervention. Death was obviously due to intracranial injury caused by the delivery of the aftercoming head. Whether this was due to resistance of the soft or bony parts of the birth canal is not apparent from the query.

It is fair to say that the induction of labor for a breech position is not an established procedure at the present time. One is doubtless justified, especially in a primiparous woman in attempting to perform an external version and carrying it out if it is easy to accomplish.

The management of a breech labor is important, and the mechanism should never be hurried. Forceps to the aftercoming head is justifiable and may facilitate delivery of the head, prevent suffocation, and avoid injury to the central nervous system especially the medulla and the cervical cord.

X RAY THERAPY IN HYPERTHYROIDISM

To the Editor—Will you please let me know what the contraindications are for high voltage x ray therapy in hyperthyroidism? From the trend of recent literature I can find little reason not to recommend this form of treatment in preference to surgery since it seems to be efficient in a high percentage of cases and is free from danger. The patient in whom I am particularly interested is over 30 years of age and the basal metabolic rate is plus 40 per cent checked. He has received no iodine therapy. Symptoms of tachycardia and tremor have existed for three months. Please give medical references on this subject. Please omit name. M D New York.

ANSWER—The contraindications to roentgen therapy for hyperthyroidism revolve around the severity of the condition. If hyperthyroidism is marked and if its symptoms are pronounced, the need for measures, both medical and surgical to improve the patient's situation as rapidly as possible is evident. On the whole, combined medical and surgical treatment, when given by some one with exceptional skill and experience, yields a higher percentage of satisfactory results than any other single method of treatment. On the other hand, if the symptoms are of moderate severity and urgent measures are not required, radiotherapy may well be tried. Such a trial involves repeated exposure of the thyroid and upper mediastinal regions to a moderate quantitative dose of roentgen rays. If, after such treatment has been continued for four months, the condition of the patient is still unsatisfactory, the advisability of continuing radiotherapy seems doubtful.

Specific references to the contraindications to radiotherapy are not available. The literature of radiotherapy for hyperthyroidism is so extensive that only the most important articles within the last few years can be included.

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MEOPAUSAL DISTURBANCE IN YOUNG WOMAN

To the Editor—A woman aged 30, suffered from dysmenorrhea for fourteen years which began three years after the onset of menstruation. The periods were regular and lasted five days with pain of such intensity as to require morphine for relief. The patient had to remain in bed for two days of each menstrual period. Eight months ago it was considered advisable to remove the uterus for relief of symptoms. At operation the right ovary was found to be cystic and was also removed. Since then at intervals coinciding with the former menstrual periods the patient has complained of headaches, hot flushes, irritability and nervous tension. To use the patient's own words she feels as though she would go to pieces if she did not hold herself in check. This last symptom is of three days duration and has appeared at a time that would be equivalent to a week before menstruation. It is causing the patient considerable worry since it is interfering with her work as a commercial chemist. She finds herself forced to sit down for fifteen minutes to calm herself sufficiently to continue her work. Aside from the symptoms mentioned the patient seems to be in good health. I would value a suggestion as to treatment. Kindly omit name. M D, Georgia.

ANSWER—Even though presumably one ovary was left in place, the patient seems to be suffering from menopausal disturbances. In a large number of cases, complete or partial relief from the distressing symptoms can be obtained from the use of estrogenic substance. The best way to administer this is by the hypodermic route and the patient can easily be taught how to give the hypodermics to herself, using the thighs for the sites of injection. The commercial preparations generally used in this country are amniotin (Squibb) and theelin (Parke Davis & Co). One ampule containing 2,000 international units of estrogenic substance should be given daily. If for some reason, the patient cannot take a hypodermic injection each day, oral preparations of estrogenic substance may be combined with the hypodermic preparations. The oral products are known as theelin capsules (Parke, Davis & Co) and amniotin capsules (Squibb). The dose administered by mouth should be about five times the hypodermic dose. It is best to begin with large doses of these substances taken daily and then cut down the amounts as the symptoms subside. After a few weeks the patient will learn just how much estrogenic substance is necessary to relieve most of the distressing symptoms. In most cases these substances must be taken for many months and generally up to about two years. In this case because the patient is only 30 years old, she most likely will have to use these preparations for a longer time. She may obtain the desired relief by taking the estrogenic substance only during the seven or ten days each month that would correspond to the premenstrual and menstrual periods. This can be determined only by experiment. In addition to estrogenic substance it is advisable to prescribe the daily or almost daily use of small doses of a mild sedative. This should be discontinued as soon as feasible.

PAGET'S DISEASE

To the Editor—A man aged 60 a veteran is suffering from Paget's disease (according to x ray observations in the right ankle). The condition sometimes is painful, and the patient walks occasionally with a limp. The trouble started during border service in 1916. The patient always has been irritable, is sort of a lone worker and doesn't mingle well with others. He is a college graduate, also an M D married and the father of six healthy children. There is no history of venereal disease. At present he is wearing protection in the heel of the shoe and is sparing the foot all he can. Please omit name.

M D Massachusetts

ANSWER—In general the treatment of Paget's disease of the bone has been most unsatisfactory except for the orthopedic measures. High doses of viosterol combined with intravenous calcium administration have apparently been used with some degree of success. Daily intravenous injections of from 5 to 10 cc of calcium gluconate for thirty days has been recommended. After an interval of fifteen days a new series of injections for another thirty days may be given.

LIGHT NEEDED FOR STUDY

To the Editor—This letter comes to you as an inquiry regarding school board work and for the benefit of the school children. Do you have or can you get information regarding the necessary foot candle lights required to give school children a negative eyestrain? The light companies in our district have been testing the lights in various school rooms and with the apparatus that they have the lighting seems inadequate although reading is not difficult with the present lighting system. It has been stated by the light company that from 15 to 20 foot candles is the proper amount of light required for study. I would appreciate your sending me any data that you may have regarding this matter.

G F LONG M D, Braddock Pa

ANSWER—The amount of light needed for study without fatigue is from 15 to 20 foot candles. The Chicago public schools are now being tested and equipped to supply 18 foot candles.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery June 29 July 1 Sec Dr J N Baker 519 Dexter Ave Montgomery

ARIZONA Phoenix Oct 67 Sec. Dr J H Patterson 826 Security Bldg Phoenix

ARKANSAS *Basic Science* Little Rock, Nov 2 Sec. Mr Louis E Gebauer 701 Main St Little Rock *Medical (Regular)* Little Rock Nov 10 Sec Dr A S Buchanan Prescott *Medical (Eclectic)* Little Rock Nov 10 Sec Dr Clarence H Young 207½ Main St. Little Rock

CALIFORNIA Sacramento Oct. 1922 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver Oct 6 Sec Dr Harvey W Snyder 422 State Office Bldg Denver

CONNECTICUT *Basic Science* New Haven Oct. 10 *Prerequisite to license examination* Address State Board of Healing Arts, 1895 Yale Station New Haven *Medical* Hartford Nov 10-11 *Endorsement* Hartford Nov 24 Sec. Dr Thomas P Murdock 147 W Main St Meriden

DELAWARE Dover July 13 15 Sec. Medical Council of Delaware Dr Joseph S McDaniel Dover

DISTRICT OF COLUMBIA Washington Jan 11 12 Sec. Commission on Licensure Dr George C Rubland, 203 District Bldg Washington

FLORIDA Jacksonville, Nov 16-17 Sec Dr William M Rowlett P O Box 786 Tampa

GEORGIA Atlanta Oct 13 Joint Sec State Examining Boards Mr R C Coleman 111 State Capitol Atlanta

HAWAII Honolulu Oct 12 15 Sec Dr James A. Morgan 48 Alexander Young Bldg Honolulu

IDaho Boise Oct 6 Commissioner of Law Enforcement Hon Emmitt Pfost 205 State House, Boise

ILLINOIS Chicago Oct 20-22 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Springfield

IOWA *Basic Science* Des Moines, Oct. 13 Sec Prof Edward A. Benbrook, Iowa State College Ames

KANSAS Topeka Dec 8-9 Sec. Board of Medical Registration and Examination Dr C H Ewing 609 Broadway Larned

KENTUCKY Louisville Dec 2-4 Sec. State Board of Health Dr A T McCormack, 532 W Main St Louisville

LOUISIANA New Orleans December Sec Dr Roy B Harrison 1507 Iberniana Bank Bldg New Orleans

MAINE Portland Nov 3-4 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St. Portland

MARYLAND *Regular* Baltimore Dec. 8 Sec. Dr John T O Mara 1215 Cathedral St Baltimore *Homeopathic* Baltimore, Dec 8-9 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston, Nov 17 19 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 F State House Boston

MICHIGAN Lansing Oct 14 16 Sec. Board of Registration in Medicine, Dr J Earl McIntyre 202 3-4 Hollister Bldg Lansing

MINNESOTA *Basic Science* Minneapolis Oct. 6-7 Sec. Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis *Medical* Minneapolis Oct 20 22 Sec Dr Julian F DuBois 350 St Peter St. St Paul

MISSOURI Kansas City Oct 21 23 State Health Commissioner Dr E T McGaugh State Capitol Bldg Jefferson City

MONTANA Helena Oct 6 Sec. Dr S A Cooney 7 W 6th Ave Helena

NEBRASKA *Basic Science* Lincoln Oct. 6-7 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Carson City Nov 2-4 Sec Dr John E. Worden Carson City

NEW JERSEY Trenton Oct 20-21 Sec. Dr James J McGuire 28 W State St. Trenton

NEW MEXICO Santa Fe, Oct 12 13 Sec Dr Le Grand Ward Santa Fe

NORTH CAROLINA *Endorsement* Raleigh Nov 30 Sec. Dr Ben J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 5-8 Sec. Dr G M Williamson 4½ S 3rd St. Grand Forks

OKLAHOMA Oklahoma City Dec. 9 Sec., Dr James D Osborn Jr Frederick

OREGON *Basic Science* Portland Nov 21 Sec Mr Charles D Byrne University of Oregon Eugene *Medical* Portland Jan. 5-7 Sec Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia January Sec. Board of Medical Education and Licensure Mr James A Newpher Education Bldg Harrisburg

SOUTH CAROLINA Columbia Nov 10 Sec Dr A Earle Booser 505 Saluda Ave. Columbia

SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licensure Dr Park B Jenkins Pierre

TEXAS Waco Nov 10 12 Sec Dr T J Crowe 918 19 20 Mercantile Bldg Dallas

VERMONT Burlington Feb 10 12 Sec Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond Dec. 9 13 Sec. Dr J W Preston 28½ Franklin Road Roanoke

WEST VIRGINIA Wheeling Oct 12 14 State Health Commissioner Dr Arthur E. McClue Charleston

WISCONSIN Madison Jan 12 14 Sec Dr Henry J Gramling 2203 South Layton Bldg Milwaukee

WYOMING Cheyenne Oct. 5 Sec Dr G M Anderson Capitol Bldg Cheyenne

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY Philadelphia, June. Sec Dr C Guy Lane, 416 Marlboro St Boston

AMERICAN BOARD OF INTERNAL MEDICINE *Written examination will be held simultaneously in different centers of the United States and Canada in December. Practical or clinical examination will be given in St. Louis in April. Chairman Dr Walter L Biering 406 Sixth Ave. Dec. 1934*

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7* Sec. Dr. Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan. 9 Sec Dr Fremont A Chandler 180 N Michigan Ave. Chicago

AMERICAN BOARD OF PEDIATRICS San Francisco Oct 22 24 Baltimore Nov 15 and Cincinnati, Nov 19 Sec Dr C A Aldrich 77 Elm St., Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec. 29 30 Application must be sent to the Secretary before Oct. 30 Sec. Dr Walter Freeman 1028 Connecticut Ave Washington D C

AMERICAN BOARD OF UROLOGY Chicago Dec. 4 6 Sec. Dr Gilbert J Thomas, 1009 Nicollet Ave Minneapolis

California Reciprocity and Endorsement Report

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports 39 physicians licensed by reciprocity and 12 physicians licensed by endorsement from June 5 through Aug 12, 1936 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists	(1928)	(1928)	Washington
University of Colorado School of Medicine	(1933)	(1934)	Colorado
University of Georgia Medical Department		(1926)	Georgia
American Medical Missionary College Chicago		(1906)	Mass
Chicago College of Medicine and Surgery		(1912)	Illinois
University of Illinois College of Medicine		(1928)	Illinois
Indiana University School of Medicine		(1912)	Arizona
(1933) Indiana			
University of Kansas School of Medicine	(1933)	(1935 2)	Kansas
Johns Hopkins University School of Medicine		(1929)	Maryland
Boston University School of Medicine		(1905)	Maine
Tufts College Medical School		(1924)	New York
University of Michigan Dept. of Medicine and Surgery		(1908)	Michigan
University of Michigan Medical School		(1916)	Michigan
Hamline University Medical Department Minnesota		(1906)	Minnesota
University of Minnesota Medical School		(1934)	Minnesota
University of Nebraska College of Medicine		(1917)	Minnesota
(1926) (1927) Nebraska, (1929) Kansas	(1931)		Texas
Ohio State University College of Medicine		(1927)	Ohio
University of Cincinnati College of Medicine		(1933)	Ohio
Western Reserve University School of Medicine		(1931)	Ohio
University of Oklahoma School of Medicine		(1926)	Oklahoma
University of Oregon Medical School	(1928)	(1933)	Oregon
University of Pennsylvania School of Medicine		(1927)	Penn.
University of Pittsburgh School of Medicine		(1925)	Penn.
McHarg Medical College		(1922)	Louisiana
University of Tennessee College of Medicine		(1932)	Tennessee
Vanderbilt University School of Medicine	(1929)	(1933)	Tennessee
Baylor University College of Medicine	(1924)	(1934)	Texas
Imperial Military Medical Academy Russia		(1899)†	Hawaii

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists		(1935) N B M Ex.	
Yale University School of Medicine		(1932) N B M Ex.	
Georgetown University School of Medicine		(1904) U S Navy	
Emory University School of Medicine		(1930) U S Navy	
Northwestern University Medical School		(1934) N B M Ex.	
Indiana University School of Medicine		(1909) U S Army	
State University of Iowa College of Medicine		(1928) U S Army	
University of Michigan Medical School		(1932) N B M Ex.	
University of Minnesota Medical School		(1917) U S Navy	
St. Louis University School of Medicine		(1934) N B M Ex.	
University of Pennsylvania School of Medicine		(1926) U S P H S	
Medical College of the State of South Carolina		(1928) N B M Ex.	

* This applicant has received the M B degree and will receive the M D degree on completion of internship

† Verification of graduation in process

District of Columbia July Examination

Mr J P Foley, assistant secretary, Commission on Licensure, reports the written examination held in Washington July 13-14, 1936 The examination covered 10 subjects and included 60 questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined 23 of whom passed and 1 failed. The following schools were represented

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine	(1935) 78 1 80 8 82 6 82 8 82 9 83 6 83 8 83 8	(1932)	76.6
Georgetown University School of Medicine	84 84 5 86 3 88	(1935)	75.6
Georgetown University School of Medicine	77 1 78 78 5 79 2 82 1 82 7 83 7	(1922)	79.3
Ohio State University College of Medicine		(1933)	84.4
University of Virginia Department of Medicine			
School	FAILED	Year Grad	Per Cent
Georgetown University School of Medicine		(1935)	75.5

Six physicians were licensed by endorsement on April 6 and July 27 The following schools were represented

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists		(1935) N B M Ex.	
University of Maryland School of Medicine and College of Physicians and Surgeons		(1933) N B M Ex.	
Harvard University Medical School		(1921) N B M Ex.	
University of Pennsylvania School of Medicine		(1923) N B M Ex.	
Medical College of Virginia		(1928) N B M Ex.	
McGill University Faculty of Medicine		(1933) N B M Ex.	

Book Notices

The Balanced Diet By Logan Clendenen MD Professor of Clinical Medicine University of Kansas Cloth Price \$1.50 Pp 207 with 15 illustrations New York & London D Appleton Century Company, Incorporated 1936

This book represents a popular presentation of the essential facts of nutrition. Part I deals with the requirements of an adequate diet. It considers briefly the functions of carbohydrates, proteins, fats, water, inorganic minerals and the vitamins, it discusses the physiologic effect of spices, condiments and beverages, and summarizes the contribution to the diet made by each of the common food groups milk, eggs, bread and so on. Part II outlines the type of diet suited to different ages, the principles and procedures for diet in various diseases, and a chapter each is devoted to food fads and the economics of food. Tables of food composition and of common weights and measures are included. The content and style of the book suggest that it was written for the intelligent layman, and in large measure the volume is suited to this end. The language for the most part is simple, the style is interesting and direct, and the illustrations are pertinent and effective. Yet, like most people who attempt popular writing, the author frequently forgets his audience and talks over their heads to the physician or other scientifically trained person whom he apparently sees lurking in the background. In this vein he discusses the historical contribution of Claude Bernard, Liebig and Hoppe-Seyler, gives a technical description of the bomb calorimeter, uses such terms as "anhydrides of amino acids," "anaerobic conditions," "purine and xanthine bodies," and throws in for good measure the structural formula for an amino acid. This is not for long, however, for he soon remembers his lay audience and reverts again to his simple, effective presentation of essential nutrition material. It is unfortunate that in not a few instances some of the material included is at least by implication inaccurate or misleading. An illustration of this is found in the discussion of bread (p 91). The average person would interpret the discussion to imply that white bread is a well balanced food, since it is stated that it "contains vitamins A, B, and G, appreciable amounts of calcium, potassium, sodium, phosphorus, chlorine, sulfur and iron" and "goes well with other foods, supplementing their deficiencies." As a matter of fact, bread contributes chiefly calories and protein to the diet and (unless made of milk) the content of minerals and vitamins is so low as to be negligible when considered in relation to the body's need of these materials and in comparison with their abundance in other foods. There are, moreover, other sections in the text where the lay reader would be misled with respect to important dietary matters. Especially to commend to the perusal of the layman (and even the physician) are the discussion of what is a balanced diet in chapter I and the chapter on food fads. The doctrine of common sense in eating and the appropriate use of knowledge of nutrition in practical everyday life are here set forth with remarkable wisdom and clarity. As previously indicated, the style of the text and its graphic method of presentation are worthy of note. To the physician and the nutritionist the book will indeed be valuable chiefly for the many suggestions it affords of how scientific material can be presented in simple and graphic form.

Syphilis and Its Treatment. By William A. Hinton MD Cloth Price \$3.50 Pp 321 New York Macmillan Company 1936

This book is nearly valueless for medical students and physicians. A third is devoted to a wholly inadequate description of the clinical aspects of syphilis of which the weakest sections are those on the two most frequent and important late manifestations, cardiovascular and neurosyphilis. A hundred pages is given to a discussion of treatment, of which only that part limited to early syphilis is satisfactory. In opposition to experts the world over, the author feels that latent syphilis should usually be allowed to go without treatment until late lesions develop ignoring the fact that all patients with late syphilis pass through a latent stage, during which adequate treatment will prevent late manifestations. For all forms of late syphilis, including cardiovascular syphilis and neurosyphilis a standard form of treatment utilizing an arsphenamine a bismuth com-

pound, mercury, and potassium iodide is proposed. He advises this plan of treatment even for dementia paralytica and states his opinion (which is in contrast to that of other observers) that the value of such special methods of treatment as tryparsamide, malaria and other forms of artificial fever have not yet been proved. A physician who attempts to treat patients with late syphilis by Hinton's methods will not only do them less than justice but subject many of them to grave danger from syphilis or its inadequate treatment.

The book is filled with statements with which other authorities do not agree. To cite only a few *Spirochaeta pallida* may be grown by Noguchi's method (p 9), the quantitative titration of serum is valueless, since some serums give a zone phenomenon (p 29), the clinical diagnosis of primary syphilis is usually easy (p 42), symptomless infection is usually due to seminal transmission of the virus (p 81), the Hinton test usually persists for a lifetime in untreated late syphilis, while "most of the current Wassermann tests and the less sensitive flocculation tests gradually grow weaker and become negative in five to ten years in perhaps half the cases" (p 84), trauma has little or no influence in the production of late syphilitic lesions (p 86), impairment of vision occasionally results from the arsphenamines (p 218), tryparsamide has no spirocheticidal properties (p 223).

Much space is devoted to the author's modification of the flocculation test for syphilis and to a defense of the contention that if the Hinton test of the blood is negative the cerebrospinal fluid will also be negative and examination of the cerebrospinal fluid is therefore unnecessary. This wishful thinking has been repeatedly disproved by others. No recognized syphilologic expert will agree with the author's light dismissal of the value of spinal fluid examinations in all types of syphilis. The literature is inadequately covered, only a few bibliographic references are provided, and none of the more revolutionary statements are adequately documented. There are no illustrations, but an adequate index is furnished. The book cannot be recommended.

The Story of The Middlesex Hospital Medical School By H. Campbell Thomson MD F.R.C.P. Consulting Physician to the Department for Nervous Diseases The Middlesex Hospital Written at the Request of the Council of the Medical School on the Occasion of the Centenary Cloth. Price 10/6 Pp 182 with 52 illustrations London John Murray 1935

In at least three ways the narrative of Dr. Thomson will attract and hold the interest of the reader. Casual details and intimate quotations, like lightning flashes, reveal the customs and manners of the successive periods described. Student behavior and amusements, as well as faculty traditions and academic formalism, are sympathetically portrayed. The history of the origin and development of this school also reads like a roster of the great names in English medicine during the century of its growth. William Hunter was connected with the hospital in its earlier days. Sir Charles Bell was one of the founders of the medical school. William Mac Michael, author of "The Gold Headed Cane," was a member of the staff, as was also Jonas Quain, later professor of anatomy at University College. Charles Gower, Bland Sutton, Burdon Sanderson, Lander Brunton and Alfred Pearce Gould are names known to every student of medicine. Again, the record of this institution constitutes an epitome of the history of medical education. Nearly all the problems connected with the rapid growth of the medical sciences and the need for almost continuous readjustment of teaching methods and school organization are illustrated in this story of struggle and achievement. At the outset the memorial from a committee of the staff petitioning the governors to authorize the establishment of a school recites in a manner that could not be improved on today the necessity for combining medical instruction and hospital practice to the infinite advantage of both. It is interesting to note that in 1843 there was appointed a 'surgeon dentist' to the hospital. In 1896 the hospital and medical school which for sixty years had existed separately side by side were amalgamated into a single corporation. This unification was shortly followed by an affiliation with the University of London. After prolonged discussion Middlesex rejected the proposal to transfer to the university all the teaching of preclinical sciences, a decision abundantly justified by

the subsequent development of the school. The entire story presents once again in high relief the predominantly clinical character of the London medical schools, which has been their glory and has aroused the emulation of the rest of the world.

Sex Education. By Maurice A. Bigelow, Professor of Biology Teachers College, Columbia University. Second edition. Cloth. Price \$1. Pp. 307. New York: American Social Hygiene Association, 1930.

This series of lectures, delivered in 1915, has been brought down to date by revisions which have done more to spoil what was originally a valuable manuscript than they have served to render it serviceable for today. Granted, as the author claims, that most of the positions he took with respect to sex education in the days when his stand required a fine courage are still tenable, the book would have been more serviceable unrevised, with suitable annotations, than in its present form. There is no longer any question among open-minded persons as to "whether" with respect to sex education, the question today is "how?" In the later chapters the author arrives at a consideration of how sex education ought to be carried out and handles the topic admirably. The earlier chapters, in the light of present conditions, are tedious and repetitious, restating as they do the case in favor of sex education, a necessity twenty years ago, a redundancy today. The form of presentation, as so often happens when lectures are published in book form, is neither a readable manuscript for the casual reader nor yet a textbook adequate for classroom purposes. The most useful material in the book is the chapter on bibliographies. There is an adequate index. Considerations of economy in publication, including the generous waiving of royalties by the author and the overhead by the publisher, unfortunately dictated the choice of a type too small for comfortable reading.

Die Vitamine und ihre klinische Anwendung. Ein kurzer Leitfaden. Von Prof. Dr. W. Stepp, Direktor der I. Medizin. Universitätsklinik, München. Doz. Dr. J. Kühnau, Direktor des Stadt. Forschungsinstituts für Bäderkunde und Stoffwechsel, Wiesbaden, und Dr. H. Schroeder, Ass. Arzt an der I. Medizin. Universitätsklinik, München. Paper. Price 6.50 marks. Pp. 130. Stuttgart: Ferdinand Enke, 1930.

This monograph affords an extraordinary amount of information in brief compass. While it is concerned mainly with recent scientific studies, it refers also to the clinical applications that have been proved or attempted with the vitamins. These dietary factors now comprise an imposing array of alphabetical letters. Among the fat-soluble vitamins the authors classify and discuss vitamins A, D, E and K, the last mentioned being the antihemorrhagic factor which recent work has indicated is required by the chicken. The growth factor of Coward and his co-workers is also included in the fat-soluble group. Under the heading of water-soluble vitamins there are discussed vitamins B₁, B₂, B₃, B₄, B₅, B₆, B₇, C, H, J, and the extrinsic factor of Castle. Thus it is apparent that the authors have presented a complete study of all the factors that have been classed as vitamins, not only those that are required by man but those which have been shown or are believed to be required for the nutrition of certain animals.

As far as human nutrition is concerned, there is considerable interest in the calculations which the authors present at the end of their monograph regarding the probable daily requirements of man. Thus they calculate that the minimal adult requirements for vitamin A would be provided by 1 mg. of carotene daily for vitamin B₁, from 0.25 to 0.50 mg. of crystalline B₁, for B₂, 1 mg. of crystalline lactoflavine, for vitamin C, from 20 to 50 mg. of crystalline ascorbic acid, for vitamin D an unknown amount for adults but about 0.002 mg. of a crystalline vitamin D for infants.

The authors also have calculated the value of a number of foods in terms of the average weights of the various vitamins which they contain. The amount of vitamins A, B, C, D and G provided by various diets used in the treatment of disease has also been attempted. It will be noted that this treatment represents quite an advance over the unitage method of stating vitamin requirements. However, it is questionable whether such a system is reasonably well advanced for general adoption at the present time or even desirable in all cases.

It is interesting to note that the monograph closes with a brief discussion of "Schrotschussbehandlung" or "shotgun vitamin therapy."

Les hydrocéphales algues et subalgues d'origine toxique. Accidents méningés otogènes purement hypertensifs. Par Robert Bourgeois. Paper. Price 32 francs. Pp. 178. Paris: Masson & Co., 1933.

Any contribution that is helpful in arriving at a better understanding and treatment of the often perplexing and dangerous neurologic complications of otitis is always welcomed. Bourgeois presents one of the less common of these, namely, the pathologic increase of cerebrospinal fluid. The general plan of the book includes a discussion of the neuroanatomy, the physiology of the spinal fluid, the pathologic anatomy, the symptomatology, the diagnosis, the pathogenesis and the treatment. An attempt is made to differentiate three types of hydrocephalus, the diffuse, the ventricular and that of the posterior fossa. The chemical constitution of the fluid is usually that of diluted cerebrospinal fluid. This is one of the most important aids in differentiating the condition from abscess in which both albumin and cells are usually increased. The section on differential diagnosis is perhaps not as complete as one might wish. Treatment, depending on the location of the fluid, includes chiefly lumbar puncture, dural incision, ventricular puncture and, in all treatment of the ear. The author does not allow the reader to become lost but frequently sums up in a pithy manner the matter that has just been presented. More than sixty illustrative cases are cited in the course of the treatise. The bibliography is ample, drawn from many sources, both native and foreign and throughout the work the author evinces a polite consideration of the views of others.

Sex and the Love Impulse. An Outspoken Guide to Happy Marriage. By J. H. Burns, B.Sc., Principal, the Children's School, Billing, Cambridgeshire, England. Paper. Price 50 cents. 1 p. 61. New York: Emerson Books, Inc., 1930.

This pamphlet is described in its own subtitle, "an outspoken guide to happy marriage" but there is more to marriage than sex. Other aspects of marriage are not ignored but sex is heavily emphasized. Certainly it is outspoken, and it is a guide in the sense that it gives useful information correctly. Its brevity and simplicity commend it. The necessity for basing a happy marriage on proper bringing up of the child is stressed in this connection the author displays what might be regarded as an excessive confidence in rules going so far as to promulgate rules for the emotions which might be regarded as a new high in regimentation. Pamphlets of equal merit by American authors are available at lower prices.

La broncografía en el estudio de las afecciones del tórax. Por Raul Piaggio Blanco y Federico García Capurro. (Trabajo realizado en las dependencias del Ministerio de Salud Pública.) Prólogo del Profesor Arce. Paper. Pp. 397 with 168 illustrations. Montevideo: Imp. El siglo ilustrado, 1933.

This work is based on the study of 386 personal cases of thoracic disease, with a total of 434 studies by bronchography. The incidence of serious pathologic lesions is higher than ordinarily encountered in North American practice, for among these cases were nearly 20 per cent of pulmonary hydatid cysts. Fifteen per cent were cases of pulmonary suppuration. Only twelve cases out of the entire list were pronounced normal. Neoplasms, faults of development, bronchial stasis and other bronchial disturbances, bronchial dilatation, pulmonary tuberculosis, pulmonary syphilis (probable), pleural effusions, pneumothorax, subphrenic processes and postoperative conditions made up the bulk of the cases included in this study. The authors deplore the fact that so many physicians are content to limit their x-ray study of the chest to the shadows which normally utilize only the contrast between the normal opaque organs and the organs which are normally permeable to the x-rays. The employment of opaque devices, such as iodized oil, has opened an entirely new field of study. The first section of this book is dedicated to the technique of anatomy and physiology of normal bronchography and is followed by a second clinical part devoted to thoracic disorders abundantly illustrated and adequately described. Contrary to experience with many of these publications the quality of the paper is such as to bring out fairly satisfactorily most of the excellent illustrations. A wealth of interesting cases have been gathered together in this interesting book. Due credit has been given to the professors under whose direction the investigation has been carried out. Among them are many names distinguished in Uruguayan medicine particularly that of Dr. Pedro Barcia, professor of radiology in the Faculty of Medicine of Montevideo.

Richtlinien für Schwangerchaftsunterbrechung und Unfruchtbarmachung aus gesundheitlichen Gründen Herausgegeben von der Reichsärztekammer Bearbeitet von Dr. Hans Stadler Cloth Price 3.75 marks Pp 180 with 84 illustrations Munich J. F. Lehmanns Verlag 1936

This small monograph concerns itself with the indications for therapeutic abortion and sterilization. Edited by Dr. Hans Stadler, a government official, it presents the legal status of this problem in Germany today. The minister of health has established a special board to which cases for abortion and sterilization must be presented for approval. The many legal restrictions and laws are of no interest to physicians outside of Germany. The medical considerations for abortion and sterilization are discussed in a number of separate chapters by individual authors. Each chapter deals with a separate obstetric or medical complication. Some of these chapters are well written and cover the subject completely, others are brief outlines and are of little value. Thus, the chapter by Seitz on the toxemias of pregnancy, the chapter by Lydtin on pulmonary tuberculosis, and one by Fritz Lange on heart disease and pregnancy cover these subjects briefly but completely. In general, the indications and contraindications for abortion and sterilization are well accepted in this country. On the other hand, a long chapter by G. A. Weltz, on the value of roentgenographic observations as an aid in the decision for or against abortion and sterilization, covers a wide variety of unrelated medical conditions and is of little value. Many other conditions are covered too briefly to be of value to the reader. This monograph was written to familiarize German physicians with the present status of abortion and sterilization in Germany, and it has added little to medical knowledge.

Pathologie und Klinik in Einzeldarstellungen Herausgegeben von L. Aschoff, H. Elias, H. Eppinger, C. Sternberg und K. F. Wenckebach Band VII Der endemische Kretinismus Von Prof. Dr. F. de Quervain, Vorsteher der Chirurgischen Universitätsklinik Bern und Prof. Dr. C. Wegelin, Direktor des Pathologisch-anatomischen Instituts der Universität Bern. Paper Price 24 marks Pp 206 with 120 illustrations Berlin & Vienna Julius Springer 1936

Professor de Quervain is chief of the surgical clinic at the University of Bern, Switzerland, and received his early training under Professor Kocher. Prof. Carl Wegelin is director of the institute of pathologic anatomy of the University of Bern. Both de Quervain and Wegelin have been intensely interested in the goiter problem, situated as they are in Bern near the center of the endemic goiter belt of Switzerland, where unfortunately a large proportion of the population is affected by a "goiter noxia" which results in cretinism. This monograph summarizes their lifelong study of the problem and presents in an authoritative manner the various clinical types of cretinism, the pathologic anatomy and histology, the pathologic physiology, the pathogenesis and the accepted methods of prophylaxis and treatment.

Your Baby and Child A Book for Mothers By M. C. Overton, M.D. F.A.A.P. Cloth Price \$2 Pp 224 with 2 illustrations. Lubbock Texas Your Baby and Child Publishing Company 1936

This is intended primarily for the mother as a guide in the general care of her infant or child. It is in no sense a medical book but a lucid and concise exposition of developmental phenomena and common ailments. The author is simple and direct in his style. The text is free from the usual formality, and the reader almost feels that he is conversing with the author. The material is recent and is in general agreement with the best medical thought. It is recommended to the intelligent mother as a guide and common sense exposition on subjects that are important and commonplace in the care of her child.

An Activity Analysis of Nursing By Ethel Johns, R.N. and Blanche Pfefferkorn, A.M., R.N. Director of Studies National League of Nursing Education. Prepared under the auspices of the Committee on the Grading of Nursing Schools. Cloth Price \$2 Pp 214 New York The Committee 1934

In the first chapter the question is raised "What should the professional nurse know and be able to do?" The answers to these questions define the scope and method of the remainder of the book. Eight statements called conclusions but which are virtually assumptions, present the opinion of the authors as to what the professional nurse should know and be able to do. The importance attached to the public health and educational aspects of nursing is manifested here and throughout the book. The activities of nurses, for example are

deduced from eight lists, one of which is a "combined" list, one a list of hospital bedside nursing activities, one a list based on private duty nursing in the home, and the other five deal with various phases of public health nursing. In this light the problem of curriculum making is discussed and proposals are made for the further study of the curriculum as a continuing project. The appendix furnishes a generous collection of source material.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Jurisdiction of State Industrial Commission over Medical Fees—In Oklahoma, said the Supreme Court of Oklahoma, the state industrial commission has no jurisdiction to make an award to a physician furnishing medical services under a written contract between such physician and the employer or insurance carrier. Where the medical services are rendered at the instance of the employee and are not contracted for by the employer or insurance carrier, and the person rendering such services seeks to hold the employer or insurance carrier liable therefor, the commission has exclusive jurisdiction to determine the existence, extent and amount of the liability. Where the medical services are rendered pursuant to an oral contract between the physician and the employer or insurance carrier, both the state industrial commission and the district courts of the state have jurisdiction to make an award or render judgment for the value thereof. The jurisdiction in such a case is concurrent. Regardless of whether the medical services were engaged by the employer, insurance carrier or the injured employee, the state industrial commission has no jurisdiction to make an award for such medical services unless a claim for compensation to be awarded the injured employee has been filed with the commission—*Swift & Co v Walden (Okla.)*, 55 P (2d) 71

Importation of Contraceptive Devices for Legitimate Use Not Illegal—The claimant, a physician specializing in gynecology, imported a package of rubber pessaries for experimental purposes to determine their reliability and usefulness as contraceptives to cure or prevent disease. The United States sought a decree in the district court, S. D. New York, directing the forfeiture, confiscation and destruction of the pessaries on the ground that they had been imported in violation of section 305 of the tariff act of 1930 (19 U. S. C. A. section 1305), which provides

All persons are prohibited from importing into the United States from any foreign country any article whatever for the prevention of conception

It was not disputed that the pessaries were imported for a lawful purpose but the United States contended that the law declares illegal the importation of any articles susceptible of being used for the prevention of conception without respect to their having a legitimate use and without regard to the intention of the importer that they are to be so used. But, said the court, such an argument was declared to be unsound in *Davis v. United States*, 62 F (2d) 473, wherein the United States circuit court of appeals for the sixth district had under consideration the proper construction of sections 334 and 396, title 18, U. S. Code, Annotated, which declare it to be unlawful for any one knowingly to mail or to ship in interstate commerce any article designed, adapted or intended for preventing conception. The court in the *Davis* case held that these sections do not prohibit the transportation of contraceptives in interstate commerce unless they are intended for illegal use. With respect to the present case, said the court the language contained in section 305 of the tariff act, taken literally, would seem to prevent the importation by physicians of any article for the prevention of conception even though the physician desired to use it or prescribe it for the purpose of saving a human life. The intention to prevent such a proper medical

use, concluded the court, "is not lightly to be ascribed to Congress," quoting from *Youngs Rubber Corporation, Inc. v. C. I. Lee & Co., Inc.*, 45 F. (2d) 103.

The physician in the present case having admittedly imported the pessaries for a lawful purpose, the court held that they did not come within the condemnation of the tariff act. A decree was therefore entered directing the return of the pessaries to the physician—*United States v. One Package*, 13 Fed. Supp. 334.

Crimes Arsenic Poisoning, Demonstration of Poison in Body Not Essential to Conviction of Homicide—Three boys became ill with nausea, vomiting, abdominal cramps and diarrhea a few hours after the ingestion of candy prepared and given to them by the defendant. A physician, although unable to diagnose their condition, prescribed a purgative and an emetic to each of them. A few days later their illness was diagnosed by another physician as metallic poisoning, probably arsenic. One of the boys died twelve days after eating the candy, and another developed "seriously drawn legs—a sort of paralysis." The defendant was convicted of first degree murder and appealed to the Supreme Court of Appeals of West Virginia.

At the trial an expert medical witness, who had made an examination and chemical analysis of the organs of the dead boy's body, testified to the effect that the stomach was covered inside with a white, sticky mucus, and was red and irritated, and that he found the lining of the stomach to be thick and inflamed. This condition, he said, was indicative of an irritating substance in the stomach and probably was caused by arsenic poisoning. He further testified that chemical analysis of the stomach, kidneys and intestines did not reveal arsenic but that, considering the time elapsed between the onset of illness and death, arsenic, if it caused the illness, might have been eliminated from the boy's system before death. The failure of the chemical analysis, said the Supreme Court of Appeals, to disclose arsenic in any of the deceased's internal organs was not conclusive that arsenic was not the cause of death. "It is obvious," said the court, "that when a person who has received poison internally lives a number of days thereafter, emetically and lavatively purged, and the kidneys functioning, the likelihood of finding traces of the poison in the system would be much less than if death had followed within a few hours." For its decision, the court relied on *Commonwealth v. Dantz*, 211 Pa. 507, 60 A. 1070, in which the court, in discussing an expert's testimony that if vomiting occurs in a patient suffering from arsenic poisoning there will be little arsenic in the body after death, said:

In this he was supported by medical authorities. Arsenic is not a strongly cumulative poison. It is temporarily deposited in the liver and other organs of the body after absorption but it is rapidly eliminated from the system by the urine, bile and other secretions. Should the person survive for two or three weeks no trace of poison may be found after death in consequence of its total elimination during the interim. *Reese's Medical Jurisprudence & Toxicology* 443. And it is not incumbent on the commonwealth to prove that a quantity of poison sufficient to cause death was found in the body before a jury can be allowed to find that it was the cause of death if the evidence sufficiently establishes the fact that the poison alleged to have caused death did kill the deceased.

Accordingly, the court concluded that the evidence justified the conviction of homicide by arsenic poisoning and affirmed the judgment of the lower court.—*State v. Koontz* (11 Va.), 183 S. E. 680.

Insanity Criminal Responsibility in Relation to Paranoia—The accused was charged with murder. He pleaded not guilty, and, under a provision of the California penal code, not guilty by reason of insanity. The jury found him guilty of murder and recommended imprisonment for life. A subsequent trial on the issue of the accused's sanity at the time of the commission of the offense resulted in a verdict that he was then sane. A motion for a new trial on the issue of insanity was denied and judgment rendered on the jury's verdict. The accused thereupon appealed to the district court of appeal, third district.

We are, said the district court of appeal impelled to hold that the verdict on the issue of insanity was not supported by the evidence. The accused called ten nonexpert witnesses who related incidents strongly indicating that the accused was insane at the time of the commission of the offense with which he was

charged. There was evidence of insanity in his family supporting the theory that he probably inherited insane tendencies. Three expert witnesses, two of whom were appointed by the court, positively asserted that the accused was insane at the time of the commission of the homicide, that his mental disorder, classified as paranoia, precluded him from distinguishing between right and wrong and from realizing that it was wrong to have killed his victim and to have attempted to kill another individual. There was no substantial evidence in the record to the contrary. The prosecution produced none to rebut that advanced on behalf of the accused. The prosecution rested solely on the presumption of law that all men are presumed to be sane. A mere disputable presumption, said the court, that all men are deemed to be sane until the contrary appears from competent proof is of slight value in support of the verdict of sanity in the present case. The evidence of insanity is so convincing that the presumption of sanity is scarcely worthy of consideration. The presumption of the sanity of the accused was completely and effectually dispelled by uncontradicted evidence to the contrary. The trial court erred, therefore, in not granting the motion for a new trial. Error was committed, too, when the trial court instructed the jury that on the issue of the accused's insanity it was not necessary that the verdict of the jury be unanimous, that the issue could be decided by a three-fourths vote. Insanity, said the appellate court, is merely a separate defense to the charge of a crime. It is necessary that the jury shall unanimously determine the merits of a defense of insanity like any other defense to an alleged crime before the accused may be found guilty of the offense. The case was therefore remanded for a new trial on the issue of insanity—*People v. Chamberlain* (Calif.), 55 P. (2d) 240.

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine Boston, Oct. 20-22 Dr. Franklin P. Lowry, 313 Washington St. Newton Mass. Secretary
American Association of Industrial Physicians and Surgeons Atlantic City N. J. Oct. 5-6 Dr. Volney S. Cheney Armour and Co. Union Stock Yards, Chicago Secretary
American Association of Railway Surgeons, Chicago Nov. 5-7 Dr. Daniel B. Moss 547 West Jackson Blvd. Chicago Secretary
American Clinical and Climatological Association Richmond, Va. Oct. 26-28 Dr. Francis M. Rackemann 263 Beacon St. Boston, Secretary
American College of Surgeons, Philadelphia, Oct. 19-23 Dr. George W. Crile 40 East Erie St., Chicago Chairman Board of Regents
American Public Health Association New Orleans Oct. 20-23 Dr. Reginald M. Atwater 50 West 50th St. New York, Executive Secretary
American Society of Tropical Medicine Baltimore November 18-20 Dr. N. Paul Hudson, Department of Bacteriology Ohio State University Columbus Ohio Secretary
Associated Anesthetists of the United States and Canada Philadelphia, Oct. 19-23 Dr. F. H. McMechan 318 Hotel Westlake Rocky River Ohio Secretary
Association of American Medical Colleges Atlanta Ga., Oct. 26-28 Dr. Fred C. Zapffe 5 South Wabash Ave. Chicago Secretary
Association of Military Surgeons of the United States Detroit Oct. 29-31 Dr. H. L. Gilchrist Army Medical Museum Washington, D. C. Secretary
Central Association of Obstetricians and Gynecologists Detroit Oct. 15-17 Dr. Ralph A. Reis 104 South Michigan Blvd. Chicago Secretary
Central Society for Clinical Research Chicago, Nov. 6-7 Dr. Lawrence D. Thompson 4932 Maryland Ave. St. Louis Secretary
Delaware, Medical Society of Reheboth Oct. 12-14 Dr. William H. Speer 917 Washington St. Wilmington Secretary
Indiana State Medical Association South Bend Oct. 6-8 Mr. Thomas A. Hendricks 23 East Ohio St. Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America St. Paul Oct. 12-16 Dr. W. B. Peck 27 East Stephenson St. Freeport Ill. Managing Director
Kansas City Southwest Clinical Society Kansas City Mo. Oct. 5-8 Dr. J. V. Bell 1103 Grand Ave. Kansas City Mo. Secretary
Kentucky State Medical Association Paducah Oct. 5-8 Dr. Arthur T. McCormack, 532 W. Main St. Louisville Secretary
Ohio State Medical Association, Cleveland Oct. 7-9 Mr. C. S. Nelson 79 East State St. Columbus Executive Secretary
Omaha Mid West Clinical Society, Omaha Oct. 26-30 Dr. J. D. McCarthy 107 South 17th St. Omaha Secretary
Oregon State Medical Society The Dalles Oct. 8-10 Dr. Morris L. Bridgeman 1020 S.W. Taylor St. Portland Secretary
Pennsylvania Medical Society of the State of Pittsburgh Oct. 5-8 Dr. Walter F. Donaldson 500 Penn. Ave. Pittsburgh Secretary
Southern Medical Association Baltimore November 17-20 Mr. C. J. Loran Empire Building Birmingham Ala. Secretary
Tri States Medical Society of Texas Louisiana and Arkansas Longview Texas Oct. 26-27 Dr. John M. Felt Mt. Pleasant Texas Secretary
Vermont State Medical Society Burlington Oct. 15-16 Dr. William G. Ricker 33 Main St. St. Johnsbury Secretary
Virginia Medical Society of Staunton Oct. 13-15 Mr. & Mrs. Edwards 1200 East Clay St. Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

G 3392 (Aug.) 1936

Abdominal Pain Due to Extra Abdominal Disorders J H Musser New Orleans—p 33
Undulant Fever Associated with Abdominal Pains. A. Trumper and J G McAlpine Montgomery—p 42

American Heart Journal, St. Louis

12:1 128 (July) 1936

Study of Esophageal Lead in Clinical Electrocardiography Part I Application of Esophageal Lead to Human Subject with Observations on Ta Wave Extrasystoles and Bundle-Branch Block. W H Brown Toronto—p 1
*Thrombo-Angitis Obliterans and Tobacco Influence of Sex Race and Skin Sensitivity to Tobacco on Cardiovascular Responses to Smoking W G Maddock R L Malcolm and F A Collier, Ann Arbor Mich—p 46
Relation of Systolic Blood Pressure and Heart Rate to Attacks of Angina Pectoris Precipitated by Effort. J E F Riseman Boston—p 53
Ligation of Coronary Arteries in Japanese Monkeys II Arrhythmias and Conduction Disturbances A de Waart C J Storm and A K J Koumans, Batavia, Java—p 70
*Appearance of T Wave in Lead IV in Normal Children and in Children with Rheumatic Heart Disease Some Observations Concerning Cause of T Waves Obtained M Robinow L N Katz and A Bohning Chicago—p 88

Thrombo-Angitis Obliterans and Tobacco—Maddock and his associates point out that, from clinical observations, physicians have known for many years that tobacco smoking is harmful to patients with thromboangitis obliterans. A reason for the injurious effect was found when, by means of skin temperature changes, it was shown that tobacco smoking produced constriction of the vessels of the extremities, this process further decreasing the already impaired peripheral circulation. Summarizing their observations, the authors state that the smoking of two cigarettes by women resulted in a drop in the skin temperatures of their fingers and toes, and in an increase of their blood pressures and pulse rates similar to those observed in men. Cigarette smoking by Jewish males caused a greater drop in the skin temperatures of their fingers and toes than occurred in Gentile males. This fact may be of significance in accounting for the greater incidence of thromboangitis obliterans among Jews than among other elements of the population. No relationship was found between skin sensitivity to tobacco and its cardiovascular effect from smoking.

T Wave in Lead 4 in Children with Rheumatic Heart Disease—Robinow and his collaborators point out that the value of lead 4 in conditions other than coronary disease has received little attention. The preliminary report by Levy and Bruenn stimulated them to investigate more systematically the appearance of lead 4 in rheumatic heart disease. The authors felt that, since many of the patients with this disease were children, it might be advisable to determine the appearance of lead 4 in normal children of various ages and to establish criteria for comparison with children having rheumatic heart disease. The authors summarize their observations as follows: 1 Upright diphasic or polyphasic T waves in lead 4 are common in normal children, especially in the younger age groups. 2 The contour of lead 4 in normal children may change considerably when curves are repeated a few months apart. 3 Children with active rheumatic heart disease show a higher percentage of upright T waves in lead 4 than do normal children of the same age. The T wave tends to become inverted when recovery from the acute stage sets in and tends to become more upright when the disease process becomes aggravated. However, exceptions to these correlations are not uncommon. 4 An analysis was made

of the factors that may be responsible for the differences in the T wave of lead 4 between children and adults as well as between normal children and children with rheumatic heart disease. 5 The electrical field at the surface of the body during the inscription of the T wave was examined in a variety of conditions, with the result that a new view concerning the causes and significance of the upright and inverted T waves in precordial leads was revealed. 6 As a result of the present study it is concluded that the practical value of lead 4 in children suffering from rheumatic heart disease is definitely limited. Single records in individual cases do not add valuable information, and serial curves supply data which may be suggestive and are only confirmatory to information obtained from the ordinary standard three leads.

American Journal of Clinical Pathology, Baltimore

G: 323-422 (July) 1936

Establishing Certification and Regulation of Practice of Pathology F M Johns New Orleans—p 323
Pathologic Study of So-Called Dental Tumors C G Darlington and L L Lefkowitz New York—p 330
Determination of Iron in Minute Amounts of Blood. A R. Rose M C. McCarthy C Blacker, F Schattner and W G Exton Newark N J—p 349
Diabetes Mellitus with Reference to Kidney Pathology J P Tollman and E J Kirk Omaha—p 357
Epitheloid Carcinoma of Pancreas with Duodenal Hemorrhage L C McGee Elkins W Va—p 371
Some Advances in Treatment of Tumors by X Rays and Radium G E Pfahler Philadelphia—p 383
Cytologic Studies of Malignant Tumors E von Haam and H G Alexander New Orleans—p 394

American J Digestive Diseases and Nutrition, Chicago

3 289 374 (July) 1936

Use of Chondroitin in Idiopathic Headache (Including Migraine) L A Crandall Jr G M Roberts and L D Snorff Chicago—p 289
*Gastro-Intestinal Symptoms in Hypertension S K Robinson Chicago—p 296
Tobacco Sensitivity in Peptic Ulcer Second Report I Ehrenfeld and M Sturtevant New York—p 299
Mesenteric Thrombosis S S Berger and R R. Blondis Cleveland—p 300
*Treatment of Peptic Ulcer by Means of Injections C A Flood and C R Mullins New York—p 303
Epidemic of Bacillary Dysentery in the Elgin State Hospital Preliminary Report L H Block and A Simon Elgin Ill—p 305
Peptic Ulcer Syndrome in the Negro Clinical and Statistical Evidence on Psychogenic as Against Racial Factors in Etiology of this Syndrome F Steigmann Chicago—p 310
Differentiation of Surgical and Medical Groups of Jaundice A A Holbrook Milwaukee—p 315
Improved Gastric Test Meal C M Wilhelm, F T O'Brien and F C Hill, Omaha—p 319
Clinical Aspects of Vitamin B Complex Deficiency in Association with Disease of Gallbladder Report of an Instance G L Weller Jr Washington, D C—p 324
Mucous Colitis Complicated by Colonic Polyposis Relieved by Allergic Management Report of an Instance. L P Gay St Louis—p 326
*Selenium Toxicosis Etiologic or Causative Factor in Pellagra? R. de R. Barondes San Francisco—p 330
II Effect of Prolonged Administration of Salicylate on Nitrogen Metabolism and Plasma Carbon Dioxide Combining Power in Dog J G Schnedorf, W B Bradley and A C Ivy Chicago—p 332
Glutamic Acid Hydrochloride as Substitute for Dilute Hydrochloric Acid in Achlorhydria P H Wosika Chicago—p 335
Phenolphthalein Studies III Phenolphthalein and Activated Charcoal B Fantus and J M Dymowicz Chicago—p 337
Superior Perirectal Abscesses J H Allen Philadelphia—p 341
Elbow Deformity of Colon J M Lynch and G J Hamilton New York—p 344

Gastro-Intestinal Symptoms in Hypertension—Robinson points out that in a clinic in which a large number of gastro-intestinal patients are seen, one is impressed with the number who have hypertension. The question arises whether these digestive complaints are not in some way related to the hypertension and its concomitant cardiovascular or neurogenic phenomena, or whether they are purely accidental and unrelated. It is recognized that hypertension is associated with nervous instability, vasomotor disturbances, migraine colitis and hyperthyroidism. It is also recognized that some of these conditions may give rise to gastro-intestinal symptoms. The author presents a study of sixty consecutive hypertensive patients whose systolic blood pressure reached 160 mm of mercury, or the diastolic 95 mm. or in whom a hypertensive heart was found at necropsy. Fifty-one of these patients had digestive com-

plaints during life, the other nine had some alimentary tract lesion of importance which was discovered at operation or at necropsy. Summarizing his observations, he states that, in the sixty cases of hypertension in which there were also gastro-intestinal complaints, peptic ulcer occurred twelve times, an incidence of 20 per cent. This high incidence suggests a possible relation, but the series is too small from which to draw any definite conclusion. Colitis also was frequent; it occurred nine times, an incidence of 15 per cent. Hypertension, hyperthyroidism and a lesion in the alimentary tract, such as colitis or ulcer, occurred together seven times. This strongly suggests that the concurrence of these three conditions is not accidental but that they are related and that some general disturbance of a circulatory or nervous nature is responsible for this triad. The author thinks that it is reasonable to conclude that the gastro-intestinal symptoms seen with hypertension are to a considerable extent conditioned by the cardiovascular, neuro-vegetative and other phenomena concomitant with the hypertension.

Treatment of Peptic Ulcer by Means of Injections—Flood and Mullins show that the relief of pain in peptic ulcer by means of daily injections of histidine monohydrochloride has been reported by numerous workers. The statement is made that the pain usually disappears after several injections while the patients remain ambulatory and eat a normal diet. In evaluating the benefits of this method of therapy, control observations with some inert substance, such as salt solution or distilled water, usually have not been made. Such control studies are of particular importance because of the psychic factors in ulcer and also because of the tendency to spontaneous remissions in the disease. It was the object of the present study to compare a series of patients treated with histidine injections with a control group injected with physiologic solution of sodium chloride. Eighteen ambulatory patients with active duodenal ulcer were used. The diagnosis was confirmed in all cases by roentgen examination. Ten of the patients had been treated in this clinic for previous attacks of ulcer and were considered to be "stubborn cases." All patients except one had been having daily epigastric pain immediately before the onset of injection treatment. None of the group had had a recent gross hemorrhage and none had pyloric obstruction as measured by the presence of a gastric residue six hours after a barium motor meal. Twelve patients in the group were given daily intragluteal injections of 5 cc of physiologic solution of sodium chloride. The other six patients received 5 cc of a 4 per cent solution of histidine monohydrochloride in a similar manner. The authors found that daily injection of saline solution for a period of about three weeks was attended by relief of pain in eight of twelve patients suffering from active duodenal ulcer. Daily injection of histidine monohydrochloride was followed by relief of pain in four of six patients with duodenal ulcer. The authors suggest that the successful results in this type of therapy in peptic ulcer are due to the psychotherapeutic value of the injections rather than to the nature of the solution used. Relief of pain in peptic ulcer by injection of salt solution emphasizes the importance of the psychic factor in the disease. The evaluation of any therapy for pain in peptic ulcer should be controlled by comparison with the effect of inert substances administered in the same way.

Selenium Toxicosis and Pellagra—Barondes states that selenium itself apparently exerts no poisonous action but that the alkali selenites and selenates are very poisonous. When animals have eaten plants poisoned by selenium they become crippled and die in great numbers, especially on being exposed to the bright light of the sun. The disease "blind staggers" and alkali disease found among live stock has definitely been traced to selenium. A marked resemblance will be noted on comparing the symptoms of selenium toxicosis in animals to the symptoms of pellagra in man. The most striking of these are that 1. Both suffer severely from gastro-intestinal disturbances and nervous and mental disorders that often terminate in complete dementia. 2. On exposure to the bright light of the sun during the spring and summer months skin manifestations present themselves in the form of vesiculations and actinic dermatitis. The other symptoms present become more aggravated and it is at this time that the mortality is highest. 3. During the fall months the skin commences to desquamate,

and by wintertime atrophic and pigmented areas resembling vitiligo make their appearance. 4. Patients with pellagra complain often of a garlic or arsenic-like odor in the mouth and breath. A somewhat similar odor is noted on and about selenium poisoned animals. As there is a disturbed sulfur metabolism in both pellagra and selenium poisoning and as sulfur has an affinity for selenium and vice versa, the administration of sulfur and diet rich in sulfur-containing foods would appear to be the proper curative and preventive measures to be instituted for both these disorders. The author advises that chemical examinations and spectroscopic analyses be made of the foods and soils in pellagrous districts to determine the presence and concentration of any and all toxic substances, so that the proper study of toxic limits, tolerance limits, diagnostic symptoms and remedial measures may be undertaken thus safeguarding the public health within the areas affected.

American Journal of Hygiene, Baltimore

24 1226 (July) 1936

- Some Results of Six Years Mosquito Infection Work. A. de Bock, Amsterdam, Holland—p. 1
- The Common Cold and Effect of Rest in Bed on Its Course. T. J. LeBlanc and M. B. Welborn Cincinnati—p. 19
- Time Required for Examination of Thick Blood Films in Malaria Studies and Use of Polychromatophils as an Index of Anemia. M. A. Barber New York—p. 25
- *Methods of Dissecting and Making Permanent Preparations of Salivary Glands and Stomachs of Anopheles. M. A. Barber and J. B. Rice New York—p. 32
- *Dustless Method of Diluting and Spreading Paris Green in Malaria Control. M. A. Barber, J. B. Rice and A. Mandekos New York—p. 41
- Degeneration of Sporozoites of Malaria Parasite in Anopheline Mosquitoes in Nature and Its Relation to Transmission of Malaria. M. A. Barber New York—p. 45
- Epizootic Fox Encephalitis. VIII. Occurrence of Virus in Upper Respiratory Tract in Natural and Experimental Infections. R. G. Green and B. B. Green Minneapolis, and W. E. Carlson and J. E. Shillinger Washington D. C.—p. 57
- Studies on Strongyloides. I. S. Ratti in Parasitic Series. Each Generation in Rat Established with Single Homogonic Larva. G. L. Graham Princeton N. J.—p. 71
- Mathematical Expression for Oxygen Consumption Following Violent Exercise. Rachel M. Jeness and N. W. Shock Berkeley Calif.—p. 88
- Plasmodium Oti N. Sp. A Plasmodium for Eastern Screech Owl (Otus asio Naevius) Infective to Canaries. F. Wolfson Baltimore—p. 94
- Specific Action of Some Drugs on Experimental Infections of Schistosoma Mansoni. A. Giovannola Rome, Italy—p. 102
- Probable Relationship Between Anemia and Susceptibility to Hookworm Infection. A. O. Foster Panama Republic of Panama—p. 109
- Studies on Nature of Immunity to Intestinal Helminths. IV. Interrelations Between Parenteral and Intestinal Immunity in Rats Infected with Nippostrongylus. A. C. Chandler Houston Texas—p. 129
- Trichomonas vaginalis Donne 1836. Its Morphologic Characteristics, Mitosis and Specific Identity. W. N. Powell Temple Texas—p. 141
- Blood Sugar Values and Tolerance for Dextrose in Trichinosis. D. L. Augustine Boston—p. 170
- Variations in Children's Disease Rates Within Berkeley. J. Stuart Berkeley Calif.—p. 177
- Anopheles Barberi Coquillett as Vector of Plasmodium Vivax Gra. 4 and Felett. W. K. Stratman Thomas Nicosia Cyprus and F. C. Baker Ithaca N. Y.—p. 182
- Epidemiologic Study of Protozoa Parasitic in Wild Rats in Baltimore with Especial Reference to Endamoeba histolytica. J. Andrews and H. F. White Baltimore—p. 184
- Periodic Phenomena of Asexual Cycle of Plasmodium Circumflexum in Canaries. F. Wolfson Baltimore—p. 207
- Concerning Transmission of Fibroma Virus (Shope) of Rabbits. R. R. Hyde, Baltimore—p. 217

Dissection of Mosquitoes—Barber and Rice describe a method of dissecting mosquitoes for examination for malaria parasites. The method is accurate, rapid and easy to learn. It may be employed without the use of a dissecting microscope and enables one to examine the glands and stomachs in the fresh condition. The essential feature of the method is that the glands are pressed out of the thorax by means of a small cover-glass, under which they remain for examination. There is also described a method of making permanent preparations of glands, stomachs and a great variety of objects. Fixation, washing, preserving, staining, dehydration and final mounting are done without removing the cover-glass from the position in which it is found in the course of routine work. Excellent preparations can be made with a minimum of time and trouble.

Dustless Method of Spreading Paris Green in Malaria Control—Barber and his collaborators describe a method of spreading paris green without the use of dust. The essential feature of the method is the use of a mixture of paris green and kerosene, the latter not serving as a larvicide alone but as a vehicle for spreading the paris green and keeping it afloat. The mixture may be diluted with water and spread by means of a horticulturists' sprayer or placed undiluted on pebbles or other convenient projectiles and thrown widely over the breeding place. The choice of method of spreading the mixture will depend on the character of the breeding place and on other conditions.

American Journal of Ophthalmology, St. Louis

19: 549 644 (July) 1936

- Megalocornea Report of Case with Gonioscopic Findings M U Troncoso and I E Givner New York—p 549
The Chemistry of the Retina II Chemical Constitution A C Krause Chicago—p 555
Surgical Treatment of Separated Retina by Galvanic Method. C B Walker Los Angeles—p 558
Histopathology of Parinaud's Conjunctivitis H D Lamb St Louis—p 571
Massive Retinal Fibrosis in Children A B Reese New York—p 576
Micro-Anatomy of the Eye with the Slit Lamp Microscope I Comparative Anatomy of Angle of Anterior Chamber in Living and Sectioned Eyes of Mammalia Part III M U Troncoso and R Castroviejo, New York—p 583
Method for Making Casts of Human Cornea. C L Stevens New York—p 593
Ptosis Report of Pedigree of Four Generations of Hereditary Congenital Ptosis Affecting Only One Eye and Pedigree of One Generation of Congenital Ptosis with Epicanthus. F H Rodin San Francisco—p 597

American Journal of Pathology, Boston

12: 437 572 (July) 1936

- Origin and Significance of Newly Formed Lymph Vessels in Carcinomatous Peritoneal Implants. J A Sampson, Albany N Y—p 437
*Lesions of Cardiac Valve Rings in Rheumatic Fever L Gross and C K Friedberg New York—p 469
Histopathology of Experimental Mumps in the Monkey *Macacus Rhesus*. C D Johnson and E W Goodpasture Nashville Tenn—p 495
Comparison of Behavior of Neuroreticular and Dermal Strain of Vaccinia Virus in Chorio-Allantoic Membrane of Chick Embryo G J Buddingh Nashville Tenn—p 511
Comparison of Growth Curves of Malignant and Normal (Embryonic and Postembryonic) Tissues of Rat. R Schrek Nashville Tenn—p 525
Biologic Method for Sterilizing Contaminated Transplantable Tumors R Schrek, Nashville Tenn—p 531
Simple Method for Silver Impregnation of Reticulum H Gordon and H H Sweets Jr, Louisville Ky—p 545
Symmetrical Cortical Necrosis of Kidneys Report of Case A Evans and E W Gilbert Los Angeles—p 553
Malignant Teratoma of Urinary Bladder Report of Case A D Pollack, New York—p 561
Lead Hematoxylin Stain for Axis Cylinders F B Mallory Boston—p 569

Lesions of Cardiac Valve Rings in Rheumatic Fever—Gross and Friedberg describe the incidence and the gross and microscopic appearances of lesions in the valve rings and inter-valvular fibrosa occurring in ninety-seven cases of rheumatic fever. They divide the cases into six clinical groups which represent various courses taken by the disease. They show that each group presents certain general gross and microscopic features that bear a relation to the clinical grouping. Definite gross abnormalities were present in the rings of one or more valves of the heart in the first five groups. In the sixth group there occasionally appeared to be normal rings on gross examination. In general, the presence and severity of gross ring abnormalities corresponded to the extent of involvement of the remainder of the valve—the mitral, aortic tricuspid and pulmonary being affected in that order. In the majority of instances all four valve rings showed definite abnormalities. The authors take up the microscopic appearance of rheumatic valve rings in each of the six groups and there consider the mechanisms that may lead to the involvement of the valve rings. They present new macroscopic and microscopic data on the development of the rheumatic lesions in the valve rings and discuss their significance with regard to the spread of the rheumatic infection to and from these sites. They show that their own observations, as well as those previously reported, are of value in elucidating the pathogenesis of other cardiac lesions. As the valve ring constitutes the proximal portion of the valve leaflet, the ring lesions are of considerable significance in studying the

development of rheumatic valvulitis. A description is given also of the changes that take place in nonrheumatic valve rings during the first eight decades of life.

American Review of Tuberculosis, New York

34: 1 178 (July) 1936

- Vicissitudes of Auscultation Address of the President J J Waring—p 1
BCG Vaccination in Western Europe G G Kaye London England—p 10
Epidemiology of Tuberculosis in Kingston Jamaica Study of Infection as Indicated by Tuberculin Test. C W Wells and H H Smith Kingston Jamaica B W I—p 43
*Incidence of Tuberculosis in Children Entering Primary Schools in Vancouver British Columbia Attempt to Trace Their Sources of Infection with Suggested New Approach to Case Finding A R J Boyd Vancouver B C—p 67
Contact as Factor in Transmission of Tuberculosis C Schuman, New York—p 85
*Latent Sources of Contact in Tuberculosis B R Shurly and D S Brachman Detroit—p 96
Efficacy of Tuberculosis Control Statistical Analysis M Pollak Peoria Ill—p 107
Pulmonary Asbestosis and Carcinoma Report of Case with Necropsy Findings D S Egbert and A J Geiger New Haven Conn—p 143
Agranulocytic Angina Following Sanocrysin Case Report S Schwartz and F H Heise Trudeau N Y—p 151
Results of Sanocrysin Treatment of Tuberculosis F I Terrill Deer Lodge Mont—p 156
Accidental Pneumoperitoneum in Artificial Pneumothorax Therapy C E Hamilton and P Amazon Brooklyn—p 160
Observations on Red Cell Sedimentation Test in Pulmonary Tuberculosis H A Patterson Fort Stanton N M—p 164
Hydrogen Ion Concentration of Blood in Pulmonary Tuberculosis E R Wiese, Chestnut Hill Pa—p 175

Tuberculosis Among Primary School Children.—Boyd undertook the study in the first place to determine the feasibility of examining whole families, in an effort to explain the occurrence of tuberculous infection and demonstrable tuberculous lesions in a group of 1,143 children entering primary schools. He also attempted to determine the sources of tuberculous infection in children entering primary schools. In tracing the sources of infection it is obviously impossible to deal with casual contacts. These children have not been at school a sufficient length of time to have the number infected appreciably changed by contact with other pupils and with teachers. The incidence of positive tuberculin reactions in the 1,143 children was found to be 19.86 per cent. For 1,001 children aged 6 years the incidence of positive reactors was 20.08 per cent, for girls 20.70 per cent and for boys 19.49 per cent. The majority of positive reactors were not sensitive to 0.1 cc of 1:1,000 dilution of old tuberculin. The incidence of infection increased with increasing density of population. Demonstrable tuberculous lesions were found in the roentgenograms of 13.22 per cent of positive reactors, which was equivalent to 2.49 per cent of the whole group. Of fifty-one children sensitive to 0.1 cc of 1:1,000 dilution of tuberculin, twenty had positive roentgenograms. The incidence of tuberculous lesions demonstrable roentgenologically was seven times as great for those with 3 plus reactions as for those with 1 plus reactions. Of seventy-two families investigated, a source of infection was found in twenty-one. Of twenty-one patients with the disease in the primary form nineteen were adults and two were children aged 15 years with the adolescent type of disease. Seven new primary cases were diagnosed among 111 adults while one new primary case was diagnosed among 141 children. All the newly discovered primary cases were minimal six being active and two apparently healed. Search for a primary case in the families in which young children react to tuberculin is a feasible method of tuberculosis case finding. Further investigation in other centers may show this method to be of practical value to school and municipal health units.

Latent Sources of Contact in Tuberculosis—Shurly and Brachman find that tuberculosis may be active for weeks and sometimes for several months before producing recognizable symptoms. Apparently healthy people unaware of having the disease may therefore act as tuberculosis carriers. From the adolescent age onward such carriers are not infrequently found wherever people congregate in large numbers. Tuberculosis is more likely to spread where people gather regularly whether for work, education, recreation or food. Some people knowingly

having active disease become a latent source of contact in deliberately masking their symptoms by calling their condition "bronchitis," "bronchiectasis," "pulmonary abscess" and the like. The authors recommend that boarders or lodgers should not be accepted, particularly in homes where there are children, without a roentgenogram of the chest first being taken. Teachers and other school workers should be required to have a roentgenogram with or without a preceding tuberculin test. High school and college students should be required to go through tuberculin test x-ray screening before being accepted for athletic teams. Modern case finding methods should be required in all places at which people gather regularly. Rehousing is strongly recommended in every so-called slum area. More education is advisable among some foreign nativity groups along the lines of inducing them to take advantage of hospitalization. Physicians may well carry out a tuberculin x-ray case finding program among the general population, especially from the adolescent ages upward, and particularly in the poor sections of large cities where there is overcrowding. Approximately 1 per cent of this group will be found to have the adult type of tuberculosis.

Archives of Dermatology and Syphilology, Chicago

34 195-352 (Aug.) 1936

- Nevoxantho Endothelioma or Juvenile Xanthoma F. E. Senebar and M. R. Caro Chicago—p. 195
- Trichophytin and Allergy to Trichophytin I. Comparison of Cutaneous Responses to Two Standard Preparations of Trichophytin and to Dermatomycol (Da Fonseca and De Azeiteiro) M. B. Sulzberger G. M. Lewis and F. Wise with assistance of Mary E. Hopper New York—p. 207
- *Sodium Thiosulfate in Treatment of Scabies G. V. Kulchar and W. M. Meininger San Francisco—p. 218
- Eczema Due to Dyed Clothing Report of Fifteen Cases P. Bonnevie and V. Genner, Copenhagen Denmark—p. 220
- Fatal Iododerma The Eleventh Case Reported in the Literature L. Hollander and G. H. Fetterman Pittsburgh—p. 228
- Extensive Ulceration in Wholly Untreated Syphilis L. F. A. Wilhelm and J. R. Scholtz Los Angeles—p. 242
- Erythroplasia of Queyrat in a Negro Report of Case S. Irgang and E. R. Alexander New York—p. 247
- Dermatitis Due to Tryparsamide Report of Case S. S. Robinson Los Angeles—p. 251
- Vitamin C Content of Sweat T. Cornbleet R. I. Klein and E. R. Pace, Chicago—p. 253
- *Paratherapeutic Articular Disturbances V. Genner Copenhagen Denmark—p. 255
- Pigmentary Form of Verruca Plana S. W. Becker Chicago—p. 265
- Tri Ethanolamine Adjunct to Dermatologic Therapy with Especial Reference to Ringworm of Scalp M. T. R. Maynard San Jose Calif—p. 268

Sodium Thiosulfate in Treatment of Scabies—Kulchar and Meininger direct attention to a recent report by Ravaut and Mahieu, in which those authors described the successful treatment of scabies by the precipitation of colloidal sulfur on the skin through the interaction of sodium thiosulfate and an acid. The treatment is carried out as follows: The patient is directed to take a soap and water bath. After he is thoroughly dry, a 40 per cent aqueous solution of sodium thiosulfate is applied over the entire body except the head and face, particular attention is paid to the areas between the fingers, to the flexural surfaces of the wrists, and to the breasts, abdomen, buttocks, thighs and external genitalia. Fifteen minutes later 4 per cent hydrochloric acid is applied in a similar way, and one hour later the applications are repeated in the same order. The procedure is repeated the next day, on the following day the patient again bathes and changes to fresh clothing. All bed linen, sleeping garments and clothing previously used are sterilized by boiling for five minutes. As the solutions are stable they may be made up in large quantities and dispensed as needed. Four ounces (120 cc.) of each solution is sufficient to carry out the treatment. The authors used sodium thiosulfate in treating fifty patients with scabetic infestations of all degrees of severity. As a control, fifty patients were treated with an ointment prepared in the manner described by Greenwood. They reach the conclusion that the precipitation of colloidal sulfur on the skin by the interaction of a 40 per cent aqueous solution of sodium thiosulfate and a 4 per cent solution of hydrochloric acid provides a simple effective and economical method of treating scabetic infestations.

Paratherapeutic Articular Disturbances—Genner says that the term paratherapeutic articular disturbances is used to designate morbid articular conditions that develop in connection

with antisyphilitic treatment either during or subsequent to a series of injections (as a rule arsphenamine and bismuth) involving two toxic factors. On the basis of his investigation the author concludes that the paratherapeutic articular disorders are in a great majority of cases due to the administration of bismuth compounds and only in exceptional cases to the administration of arsphenamine. This conclusion is derived from an analysis of seventy-nine cases in a total of 2,235 cases in which antisyphilitic treatment was given. Cases of arthralgia were not recorded until arsphenamine-mercury treatment was replaced by arsphenamine-bismuth treatment. The articular pain was aggravated by continuation of the bismuth treatment so that this form of therapy had to be discontinued in a fairly large number of cases. The pain subsided when the bismuth therapy was discontinued. In only 4 per cent of the cases of articular disturbance did the symptoms begin to appear during or after a series of treatments with arsphenamine, in 54 per cent it appeared during or after a series of treatments with arsphenamine and bismuth compounds and in 42 per cent during or after a series of treatments with bismuth compounds alone. The last mentioned evidence concerning the connection between the articular pain and the bismuth intoxication is further emphasized by the fact that the onset of arthralgia is predominantly intratherapeutic (75 per cent), appearing often within a short time (from one to a few days) after an injection of a bismuth compound, and it is accentuated by each subsequent injection of this substance. An analysis of the individual cases showed several instances in which articular pain first appeared during a course of combined treatment (arsphenamine and bismuth compounds) and subsided when the treatment was continued with arsphenamine alone, while it recurred when a bismuth compound was again given.

Archives of Neurology and Psychiatry, Chicago

36 231-448 (Aug.) 1936

- Reacting Cells in the Brain in Presence of Foreign Body G. B. Hassin Chicago—p. 231
- Congenital Atresia and Stenosis of Aqueduct of Sylvius Anatomical Study of Six Cases H. N. Roback New York and M. L. Gerstle Jr. San Francisco—p. 248
- *Cortical Encephalomalacia in Infancy Contribution to Study of Infantile Cerebral Paralysis P. M. Levin Baltimore—p. 264
- Clinicopathologic Study of Alzheimer's Disease Relationship to Senile Conditions D. Rothschild, Foxborough Mass. and J. Kasanin, Howard R. I.—p. 293
- Feeling of Unreality C. P. Oberndorf New York—p. 322
- *Insulin Hypoglycemia in Epilepsy E. Ziskind with technical assistance of Ruth Bolton Los Angeles—p. 331
- Influence of Emotions on Dextrose Tolerance O. Diethelm Baltimore—p. 342
- Vasomotor Disturbance and Edema Associated with Cerebral Hemiplegia L. B. Ellis and Soma Weiss Boston—p. 362
- Specific Epileptic Syndrome Relieved by Lysis of Pachionian Granulations Preliminary Report of Three Cases J. E. Scarff New York—p. 373
- Constancy of Cerebral Blood Flow W. G. Lennox Boston—p. 375

Cortical Encephalomalacia in Infancy—According to Levin, the cerebral palsies of childhood have been intensively studied clinically and have been divided into a number of fairly characteristic categories. Knowledge of the pathology of this group of common neurologic conditions has not kept pace with clinical studies. The few patients who have died during acute stages of the illness showed on postmortem examination conditions other than inflammation. The author reports a clinicopathologic study of the case of an infant with convulsive attacks and hemiplegia. At necropsy, multiple areas of encephalomalacia were seen, limited to the cerebral cortex. Definite arterial lesions were present but they were not sufficiently severe to be alone responsible for the parenchymatous lesions. The condition was similar in many respects to that in other cases recently described and the author thinks that it represents a not uncommon pathologic basis for infantile cerebral paralysis. The case concerns an infant with convulsive seizures beginning at the age of 4 months and hemiplegia beginning at the age of 9 months. Death occurred in the ninth month from circulatory and respiratory collapse after trephining of the skull. On pathologic examination of the brain, multiple laminar softening were noted throughout the cerebral cortex, most marked in the parietal region of each side. The pial arteries showed calcification of the media intima proliferation was present in the vessels and in the large basal arteries. In the areas of softening

there were a marked proliferation of the capillaries and an abundance of phagocytic cells containing fat. About the vessels were accumulations of cells, from which gradations could be traced to the fat-laden macrophages. The condition appears to represent an early stage in the development of diffuse or lobar cerebral sclerosis, a common lesion in infantile cerebral paralysis. The lesions appear to be due to alterations in the circulation of the cerebral cortex. Actual vascular occlusion is rarely found, and it is believed that vasomotor disturbances may play an important part in the pathogenesis of this disease.

Insulin Hypoglycemia in Epilepsy—Ziskind and Bolton point out that reports of many studies have appeared in the literature suggesting that epileptic attacks may be due to hypoglycemia. On the whole, the evidence has been indirect and not conclusive. The injection of insulin is known to induce convulsions in several species of animals. In fact, insulin was formerly assayed in rabbits by this method. Convulsions resulting from an overdose of insulin are of infrequent occurrence in adult human beings. Still, if hypoglycemia bears any etiologic relation to the seizures of epilepsy, one would expect insulin to produce convulsions in these patients more readily than in normal persons. Indeed, the direct induction of hypoglycemia in a group of epileptic patients might present the crucial evidence necessary to a solution of the problem. The authors report their investigations on this problem. They found that insulin administered subcutaneously in doses of from 10 to 60 units to forty epileptic patients was not accompanied by convulsions in a single instance. Superhydration produced by the intake of 7 quarts (liters) of water at the rate of 1 quart every thirty minutes in addition to injection of insulin was accompanied by four convulsions in the thirty epileptic patients tested. The convulsions did not coincide with the lowest blood sugar concentrations. Further, the same number of convulsions resulted in thirty-one epileptic patients in whom superhydration alone was produced. Spontaneous hypoglycemia is probably not a prevalent factor in the precipitation of seizures in epileptic patients. Convulsions occurred in one fourth of the patients receiving large quantities of water.

Archives of Ophthalmology, Chicago

16 1172 (July) 1936

- Subjective Visual Sensations G L. Johnson, Durban, Natal South Africa.—p 1
- Transitory Word Blindness Associated with Right Homonymous Hemianopia Report of Case in Patient with Cancer of Prostate Gland. H G A. Gjessing Drammen Norway.—p 5
- *Relation Between Blue Scleras and Hyperparathyroidism A Rados and L. C. Rosenberg Newark N J.—p 8
- Partial Rupture of Lamina Cribrosa from Contusion of Eyeball A. Tillema Amsterdam Netherlands.—p 36
- Human Cyclopa Katharine H Chapman Chicago.—p 40
- Melanocarcinoma of Conjunctiva Report of Case W E Vandevere and M P S Spearman El Paso Texas.—p 46
- Filtration Experiments with Virus of Inclusion Blepharitis Evelyn B Tilden and S R Gifford Chicago.—p 51
- Epithelial Inlay in Cases of Refractory Ectropion J F S Esser Monaco Monaco.—p 55
- Biochemistry of Lens VII Some Studies on Vitamin C and Lens J Bellows Chicago.—p 58
- Circulation of Aqueous V Mechanism of Schlemm's Canal. J S Friedenwald, Baltimore.—p 65
- Isaac Hays Pioneer American Ophthalmologist N Flaxman Chicago.—p 78
- Marginal Dystrophy of Cornea Associated with Prolapse of Iris W Zentmayer Philadelphia.—p 91
- Primary Tumor of Optic Nerve Report of Three Cases G H Mehney Ann Arbor Mich.—p 95

Relation Between Blue Scleras and Hyperparathyroidism—Rados and Rosenberg state that the clinical entity consisting of blue scleras, osteoporosis with spontaneous fractures and deafness and the dominant hereditary transmission of the syndrome have long been known to ophthalmologists and pediatricians. In recent years many authors have considered that alteration in the ductless glands may be the causative factor. Others have made an attempt to explain the syndrome as entirely caused by hypofunctioning of the parathyroid glands, involving hypocalcemia. In contradiction of this view, Dessoff pointed out the possibility that hyperparathyroidism might be the sole cause. The authors have made a detailed study of two cases and say that their metabolic study strongly confirms the decided differences in the pathologic osseous conditions existing in hyperparathyroidism and those associated with

blue scleras. In the usual cases of blue scleras associated with spontaneous fractures and hereditary deafness there are not sufficient variations in the values for calcium, phosphorus and phosphatase to warrant a supposition of involved endocrine disturbance. In osteogenesis imperfecta there is evidence of decided hereditary transmission, in contrast to hyperparathyroidism, which shows no such influence. Cystic fibrous osteitis is based on hyperactivity of the parathyroid glands, the usual cause being tumor formation within the glands, resulting in mobilization of the supply of calcium. The spontaneous fractures occur in adult life and are accompanied by a negative calcium balance, cyst formation and giant cell tumors of the bones. The small minority of cases in which blue scleras are associated with proved parathyroid disorder are rare exceptions, the pathologic features not constituting the usual picture. The most plausible explanation lies in the possibility that the condition of hyperparathyroidism has been superimposed on a preexistent congenital anomaly. Similarly, spontaneous fractures are clinical features of the other form of generalized osseous disease, osteogenesis imperfecta, associated with blue scleras and deafness. They occur in utero or in infancy or childhood, in contradistinction to the adult age incidence of hyperparathyroidism. The roentgenographic picture of the osseous condition is that of osteoporosis. There is absence of a negative calcium balance and lack of increased phosphatase activity in osteogenesis imperfecta, the latter being a distinguishing feature of the parathyroid syndrome. Furthermore, blue scleras are characterized by dominant hereditary transmission and are due to a congenital faulty differentiation or malformation of the mesenchyma.

Endocrinology, Los Angeles

20 461-610 (July) 1936

- *Treatment of Diabetes Mellitus with Insoluble Insulin Compounds P A. Gray, Santa Barbara Calif.—p 461
- Effect of Oestrogenic Hormone on Experimental Pancreatic Diabetes in the Monkey W O Nelson and M D Overholser Columbia Mo.—p 473
- Effect of Complete and Partial Hypophysectomy in Adult Albino Rats on Nitrogen Calcium and Phosphorus Metabolism. D Perla and Marta Sandberg New York.—p 481
- Composition of Weight Lost and Nitrogen Partition of Tissues in Rats After Hypophysectomy M Lee and G B Ayres Boston.—p 489
- Effect of Hypophysectomy and of Phytone Injections on Pancreas and Liver of Newt A Elizabeth Adams and Elsie N Ward South Hadley Mass.—p 496
- Quantitative Studies on Structural Changes Induced in Anterior Hypophysis by Injections of Estrin. J M Wolfe and C S Chadwick Nashville, Tenn.—p 503
- Relationship of Anterior Pituitary Gland to Thyroid and Ovary L. Loeb J Saxton and S J Hayward St. Louis.—p 511
- Assay of Blood and Urine for Thyrotropic Hormone in Thyrotoxicosis and Myxedema. S Hertz and E G Oastler Boston.—p 520
- Similarity of Iodine Remission in Experimental Anterior Hypophyseal Hyperthyroidism Hyperthyroidism of Acromegaly and That of Exophthalmic Goiter H B Friedgood Boston.—p 526
- *Influence of Pregnancy on Resistance to Thyroxine with Data on Creatine Content of Maternal and Fetal Myocardium. M Bodansky and Virginia B Duff Galveston Texas.—p 537
- Age as Factor in Resistance of Albino Rat to Thyroxine with Further Observations on Creatine Content of Tissues in Experimental Hyperthyroidism M Bodansky and Virginia B Duff Galveston Texas.—p 541
- Analyses of Urine of Chimpanzee for Estrogenic Content During Various Stages of Menstrual Cycle. E Allen A W Diddle T H Burford and J H Elder New Haven Conn.—p 546
- Role of Corpora Lutea in Prolonging Life of Adrenalectomized Rats F E. Emery and E L Schwabe Buffalo.—p 550
- Influence of Environmental Temperature and Salts on Survival Period of Adrenalectomized Rats R S Weiser and E R Norris Seattle.—p 556

Treatment of Diabetes Mellitus with Insoluble Insulin Compounds—Gray points out that in 1935 Bischoff and Maxwell reported that tannic acid was an effective precipitant of hormones of protein character and that the resulting salt was biologically more effective than the uncombined hormone. When commercial insulin was combined with tannic acid, a salt formed which was absorbed more slowly and had a more prolonged effect on the blood sugar of experimental animals than did the insulin alone. The effect was so striking that the question of its application to the treatment of diabetes in human patients immediately arose. Insulin tannate is a salt of insulin which is insoluble in the presence of sodium chloride at a *pH* acid to the iso electric point. It is prepared by mixing

in a hypodermic syringe equal volumes of U-100 strength insulin and a tannic acid solution. The resulting mixture contains 3 mg of tannic acid per hundred cubic centimeters. It has about 20 to 25 per cent more hypoglycemic action per unit than commercial insulin. Eighteen patients of various ages and with diabetes of varying degrees of severity have been treated with insulin tannate for periods varying from a few days to two weeks consecutively. Control of the diabetes has been possible when this compound is used alone or in combination with commercial insulin. Because of the relative insolubility of insulin tannate in human and animal tissues delayed absorption and hence prolonged liberation of free insulin occur. Increased effectiveness of insulin tannate over commercial insulin is shown by lower fasting blood sugar levels and smaller number of total units required per day when it is used. The hypoglycemic effect of insulin tannate has been compared to that of insulin protamine and found to be of about the same order. The cheapness and availability of insulin tannate recommend it.

Pregnancy and Hyperthyroidism—Bodansky and Duff found that pregnant rats possess a remarkable tolerance to thyroxine. Despite the administration subcutaneously, of 1 mg daily during the last ten to twelve days of gestation, such rats showed almost the same gain in weight as their untreated pregnant controls. However, a comparison of the weights before the thyroxine treatment was instituted and at the end of labor revealed a moderate loss in most cases, in contrast to the usual, absolute gain in weight of the control rats. The nonpregnant, thyroxine treated controls invariably lost weight. In a considerable proportion of the thyroxine treated rats the gestation period was normal. The number per litter was approximately the same, but the weight was somewhat less in the thyrotoxic group. A much greater incidence of stillbirths occurred in the thyroxine treated rats than in the normal controls. Although hyperthyroidism in the mothers produced a marked diminution of the creatine content of the myocardium and cardiac hypertrophy, no similar effects were produced on the fetal hearts, the size and creatine concentration being within normal limits.

Georgia Medical Association Journal, Atlanta

25 225 266 (July) 1936

Thyroid and Parathyroid Problems. Chronic Hyperthyroidism with Persistent Low Basal Metabolic Rate. T. C. Davison. Atlanta—p 225

Id. Goiter in Children. J. G. Gay. Atlanta—p 228

Id. Goiter and Iodine. B. H. Clifton. Atlanta—p 230

Id. Hyperparathyroidism. J. R. Broderick. Savannah—p 232

Cancer of Cervix. J. A. Fountain. Macon—p 238

To What Extent May Hormones Be Blamed for Cancer? Importance of Basal Genetic Propensity. C. P. Roberts. Atlanta—p 242

Bromide Intoxication. Report of Cases. W. G. Elliott. Cuthbert—p 245

*Antenatal Administration of Quinine. L. Smith. Atlanta—p 247

Antepartum Administration of Quinine—Smith resorted to antepartum administration of quinine salt in sixty normal pregnant women. He shows that quinine administered in small doses for three weeks before the expected onset of labor will increase the basic tone of the uterine muscle fibers and thus reinforce contractions. The increased tone of the muscles will hasten the development of the lower uterine segment and more positively develop the hydrostatic bag of waters, which will earlier efface the cervix and dilate the os. The general health of the patients is definitely improved by small doses of quinine, their appetite is improved and indigestion and heartburn, of which many complain in the late stages of pregnancy, are often entirely or greatly relieved. In the cases observed by the author, the first stage of labor took place painlessly and in many cases the first obstetric examination revealed an almost complete dilatation. In none of the cases did the obliteration of the cervix and dilatation of the os take as long as usual. Moreover the author as well as other observers noted a lower frequency of fever in the women who had been given quinine. There was no puerperal sepsis among the author's cases nor did he observe more than a normal flow of blood after delivery. He stresses that in no sense should this method of administering small doses of quinine be considered a method of inducing labor and he believes that it is now agreed by pharmacologists and

clinicians that quinine is not an oxytocic nor is it of any value in inducing labor. There was no apparent tendency of the patients to go into labor prematurely, and the estimated duration of confinement varied both ways just as the cases did in which no quinine had been given. The author did not have a case of precipitate labor, although several patients were delivered in a remarkably short time. There was no case of retained placenta in this series, and the number delivered by Credé's method was thirty-seven, whereas in a similar group he quinized the author delivered fifty-two by this method. Only normal cases were selected for the quinine treatment. There is probably a large field for this treatment in abnormal cases, but further experience is needed. When a long, slow labor is desired, so that the head may be molded or the passage be dilated more slowly, this treatment is contraindicated. The author used quinine dihydrochloride in doses of 1½ grains (0.1 Gm.) three times a day beginning three weeks before the expected confinement, and he found only one patient who could not take the drug.

Journal of Experimental Medicine, New York

64 1160 (July 1) 1936

*Effect of Avitaminosis A on the Prostate. R. A. Moore. New York and J. Mark—p 1

Studies on Natural Immunity to Pneumococcus Type III. I. Capacity of Strains of Pneumococcus Type III to Grow at 41 C. and Their Virulence for Rabbits. J. F. Enders and M. F. Shaffer, Boston—p 7

Effect of Purified Enzymes on Viruses and Gram Negative Bacteria. M. H. Merrill. Princeton, N. J.—p 19

Chemo-Immunologic Studies on Conjugated Carbohydrate Proteins. V. Immunologic Properties of an Artificial Antigen Containing Glucuronic Acid. W. F. Goebel. New York—p 29

Air Driven Ultracentrifuge for Molecular Sedimentation. J. Beece, E. G. Pickels and R. W. G. Wyckoff, New York—p 39

Immunization Experiments with Swine Influenza Virus. R. E. Stone. Princeton, N. J.—p 47

Serologic Reactions with Virus Causing Rabbit Papillomas Which Become Cancerous. I. Tests of Blood of Animals Carrying Papillomas. J. G. Kidd, J. W. Beard and P. Rous. New York—p 63

Serologic Reactions with Virus Causing Rabbit Papillomas Which Become Cancerous. II. Tests of Blood of Animals Carrying Vascular Epithelial Tumors. J. G. Kidd, J. W. Beard and P. Rous. New York—p 79

Changes in Bone Marrow and Blood Cells of Developing Rabbits. F. R. Sabin, F. R. Miller, L. C. Smithburn, R. M. Thomas and L. E. Hummel. New York—p 97

Cultivation of Tissues for Prolonged Periods in Single Flasks. R. C. Parker. New York—p 121

Fate of Virulent Hemolytic Streptococcus Injected into Skin of Normal and Immunized Rabbits. D. M. Angevine. New York—p 131

Immunologic Specificity of Staphylococci. IV. Cutaneous Reaction to Type Specific Carbohydrates. L. A. Julianelle and A. F. Hartman. St. Louis—p 149

Effect of Avitaminosis A on the Prostate—In a study of the prostate in man, Moore and Mark observed five cases with metaplasia and inflammation, which resembled the effects of avitaminosis A. They investigated a series of rats on a deficient diet. Eight prepuberal and eight postpuberal white rats from the same colony were placed on a diet that was complete in all respects except for a deficiency of vitamin A. An additional four prepuberal and two postpuberal animals were fed the same diet and 2 drops of carotene in oil every three days. All animals were given 0.4 cc of wheat germ oil by mouth or hypodermically every ten days. There was an excess of food in the cages at all times. The prepuberal animals were 30 days of age and the postpuberal 100 days of age at the start of the experiment. Animals were killed or died after from eighty-five to 115 days on the diet. The control animals were killed after 115 days and showed no pathological changes. All experimental animals at death showed clinical xerophthalmia. Vitamin A deficiency alone in the white rat was associated with atrophy of the testis and accessory sexual glands. This would appear to be indicative of some disturbance in the hypophyseal gonadal prostatic hormone relationships. Vitamin A deficiency in the rat was found to be associated with foci of inflammation and epithelial metaplasia in the prostatic acini and vesicular ducts entirely similar to that reported in other organs. Focal metaplasia and inflammation is occasionally encountered in the prostate of patients with extreme inanition associated with stenosis of the ejaculatory duct. It seems probable that this lesion is due to vitamin A deficiency.

Journal of Infectious Diseases, Chicago

59:1 128 (July Aug.) 1936

- Recoverability of *Mycobacterium Tuberculosis Avium* from Experimentally Infected Guinea Pigs W H Feldman Rochester Minn—p 1
- Important Factor in Mechanism of Specific Bacterial Agglutination C R Donham and C P Fitch, St Paul—p 6
- *Effect of Mucin on Infections by Bacteria. W J Nungester L F Jourdonais and A A Wolf Chicago—p 11
- Mediums for Study of Diphtheria Marie Koch McGuigan and M Frohisher Jr Baltimore—p 22
- *Precipitin and Complement Fixation Reactions of Polysaccharide Extracts of *Brucella* Margaret Higginbotham and Lucy S Heathman Minneapolis—p 30
- Bactericidal and Biologic Properties of Phenylmercuric Substrate. K T Sasano and E M Medlar Mount McGregor N Y—p 35
- Antigenic Characteristics of Related Organisms After Cultivation on Synthetic Medium P J Beard and Jane E Snow Stanford University Calif—p 40
- Recovery of Virulent Tubercle Bacilli from Tissues of Swine Intended for Food W H Feldman Rochester Minn—p 43
- Vitamin B Deficiency and Resistance to Toxin of *Bacillus Welchii* in Rats S B Rose W B Rose and J A Kolmer Philadelphia—p 50
- Dietary Deficiencies and Resistance to Infection by *Monilia* Lois Almon, S B Pessin and W D Stovall Madison Wis—p 54
- Relation of Herpes Antiviral Property of Human Blood to Sex Pregnancy and Menstruation N P Hudson Enid A Cook and F L Adair Columbus Ohio, and Chicago—p 60
- Relations Between Certain Heterophile Antibodies and Antigens C A Stuart M Fulton R P Ash and K K Gregory Providence R I—p 65
- Cellular Reactions During Primary Infections and Superinfections of *Plasmodium Brasiliense* in Panamanian Monkeys W H Taliaferro and P R Cannon Chicago—p 72
- Complement Studies on Dogs During B Avitaminosis and Anhydremia S B Rose and J A Kolmer Philadelphia—p 126

Effect of Mucin on Infections—Nungester and his associates point out that in 1932 they reported the observation that organisms suspended in gastric mucin and injected intraperitoneally into mice were more virulent than when inoculated in suspension in saline solution. The experimental work they report here deals with the effect of sterilized gastric mucin on the virulence of bacteria when injected into the host simultaneously with the organisms. They found that, when sterilized gastric mucin is used instead of saline solution as a menstruum for suspending various bacteria, the host is placed at a marked disadvantage and may succumb to what would otherwise be a sublethal infection. This effect has been noted when injections were made intraperitoneally, subcutaneously or intratracheally. The mechanism of the action is not yet understood. Mucin does not interfere with phagocytosis but does inhibit the bactericidal properties of phagocytic cells. It enables bacteria to survive in the body of the host for longer periods without diminution in numbers or it may allow the organisms to increase in numbers and so result in the death of the animal. The viscosity and cohesive properties of the mucin appear to be important indexes as to the effectiveness of mucin on bacterial infections. The authors think that their observations on the effect of mucin on the virulence of bacteria lie in two fields. First, it offers an additional method for studying infections in animals with organisms that normally do not infect the animal. Secondly, since mucin occurs in parts of the body that are prone to be the sites of infectious processes, as the respiratory tract the intestinal tract and parts of the genital tract one wonders whether or not the accumulation of excessive amounts of mucin in these sites under abnormal conditions might predispose such sites to infection.

Complement Fixation Reactions of Polysaccharide Extracts of *Brucella*—Higginbotham and Heathman prepared polysaccharides from seven smooth *Brucella* strains, including varieties *melitensis*, *abortus*, *suis* and *paramelitensis*. The results of the precipitin tests employing rabbit antiserum for each of the seven strains and solutions of the polysaccharides from the seven strains and the results of the precipitin tests employing patients' serums and the polysaccharides are recorded in tables. In every instance the polysaccharide extract from a given strain precipitated its homologous antiserum. The authors reach the conclusion that the results of the precipitin tests with the polysaccharide preparations from seven strains of *Brucella* seem to show that organisms otherwise classified as of the same type may possess variable antigenic properties. The precipitin test is not a satisfactory one for establishing the type identity of a *Brucella* organism, although extracts from three

of the seven strains were found to give a positive reaction only with the homologous type antiserum. The results support the contention that a polyvalent antigen including some local strains should be employed in the routine serologic examination for undulant fever. All the serums from cases of human brucellosis which showed agglutination with the stock antigens (*Brucella melitensis*, *abortus* and *suis*) gave positive precipitin reactions with one or more of the *brucella* polysaccharides. Although the series is small, the polysaccharide precipitin test would seem to have no advantage over the agglutination test as a routine procedure and has the disadvantage of being impracticable because of the time and cost involved in preparing extracts. The results of complement fixation tests with the *Brucella* polysaccharide extracts and specific antisera, as well as those with the extracts and patients' serums, were not as clear cut as the precipitin reactions.

Journal of Urology, Baltimore

36 99 188 (Aug.) 1936

- Sarcoma of Kidney and Stone. Report of Case and Review of Literature. H L Kretschmer Chicago—p 99
- Diagnosis of Spontaneous Rupture of Kidney Pelvis by Means of Intravenous Urography J W Rogers New York—p 105
- Crossed Renal Ectopia M M Mayers Los Angeles—p 111
- Actinomycosis of Kidney in Infancy and Childhood H L Kretschmer and W G Hibbs, Chicago—p 123
- Cystic Dilatation of Lower End of Ureter with Especial Reference to Transurethral Treatment with High Frequency Cutting Current. Report of Two Cases J A Lazarus New York—p 139
- Rhabdomyosarcoma of Urinary Bladder J Welfeld L Hill and J G Hillebrand Chicago—p 150
- Giant Prostatic Calculi. Report of Case. C O Ritch Chicago—p 157
- Relation of Parathyroid Glands to Urinary Lithiasis J D Barney and E R Mintz Boston—p 159
- Urinary Lithiasis. Experimental Production and Solution with Clinical Application and End Results. C C Higgins Cleveland—p 168
- Technic Used in Removal of Tissue from Bladder E. Allen and N J Heckel Chicago—p 178
- Straight Sound with Beak Tip for Dilating Prostatic Urethra. E W Hirsch Chicago—p 180
- Three Miniature Cysto-Urethroscopes M F Campbell New York—p 183

Kansas Medical Society Journal, Topeka

37: 309 352 (Aug.) 1936

- *Diabetes Mellitus in Pregnancy J G Stewart Topeka—p 309
- Toxicity of Cinchophen. Clinical Study G A Westfall Halstead—p 311
- Osteomyelitis of Spine M E Pusitz A K Owen G A Finney, J L Latimore and M Gerundo Topeka—p 313

Diabetes Mellitus in Pregnancy—Stewart points out that the danger of pregnancy in diabetes was extreme before the discovery of insulin. The outlook today is far less serious and with proper treatment with a weighed diet and the proper amount of insulin a great many pregnancies can be carried to term without the extreme danger that existed before the use of insulin. Even with this improvement, however the infant mortality rate according to certain authorities is 45.2 per cent. Consequently the situation is still very serious. The author thinks that, if the diabetic woman asks the physician whether it is safe to have a child, it is the physician's duty to tell the patient exactly what her chances are for herself and her baby. Diabetic patients are divided into three classes (1) those with mild diabetes, who can be controlled on a diet alone without insulin (2) those with moderately severe diabetes, who can be controlled on relatively moderate amounts of insulin (3) those with severe diabetes, who take large amounts of insulin and who show periodic diacetic acid and acetone. It is known that as soon as pregnancy exists the amount of insulin has to be increased. It is also known that if there is any vomiting there will be a degree of acidosis consequently the only safe rule to go by is to advise the patient with mild diabetes that the chances are fairly good but even today patients with moderately severe and severe diabetes should be advised against planning to have children. If the diabetic woman finds that she is pregnant, the internist should analyze her case carefully. The woman should be hospitalized and put on a basal diet plus about 15 per cent, and with a proper amount of insulin to see whether a normal fasting blood sugar can be obtained and also whether there is any diacetic acid and acetone in the urine, as well as to see the amount of carbon dioxide. The author thinks that, if there is a high fasting blood sugar with a care-

fully weighed diet and fairly frequent suggestion of insulin shock when the insulin is given three times daily, also when diacetic acid and acetone are present and there is a somewhat diminished carbon dioxide, it is the internist's duty to refer the patient back to the obstetrician with the advice that a therapeutic abortion be performed to save the life of the patient. However, if there can be a good control of the blood sugar and there is very infrequent or no diacetic acid or acetone found in the urine after sufficient observation, the patient could go through a pregnancy and have a normal child. The author gives the history of a case which demonstrates what a serious problem pregnancy is in a woman with severe diabetes, the danger of anesthesia in severe diabetes and the increased severity of symptoms in diabetes complicated by infection of any kind.

Medical Annals of District of Columbia, Washington

5 189 222 (July) 1936

- Dependence of Modern Civilization on Health W. A. White, Washington—p 189
- Clinical Observations on Glomerulonephritis J. P. O'Hare Boston—p 199
- Etiology of Rheumatoid (Atrophic) Arthritis. W. K. Myers, Washington—p 203
- Diabetic Gangrene Complicated by Welch Bacillus Infection Report of Case J. O. Warfield Jr. Washington—p 207
- Fundamentals of Internal Medicine Diseases of Nervous System A. Schneider Washington—p 209

Minnesota Medicine, St. Paul

19: 415-486 (July) 1936

- Some Historical Notes on Treatment of Angina Pectoris F. A. Willius Rochester—p 415
- Treatment of Behavior Problems Particularly Delinquency in European Clinics Visited During Summer of 1935 H. S. Lippman St. Paul—p 421
- The Social Aspects of Delinquency G. R. Kamman St. Paul—p 424
- Facts and Fancies Having Some Bearing on the Psychology of the Delinquent Child F. Whitmore St. Paul—p 429
- Report on Diagnosis and Treatment of Rheumatic Diseases in Europe C. H. Slocumb Rochester—p 436
- Lymphogranuloma Inguinale J. F. Madden St. Paul—p 441
- Death from Asthma Olga S. Hansen Minneapolis—p 445
- Visual Field Contractions After Head Injury H. W. Grant St. Paul—p 449
- Intussusception B. F. Davis Duluth—p 455

Radiology, Syracuse, N. Y.

27 1 130 (July) 1936

- Distribution of Radiation Within Average Female Pelvis for Different Methods of Applying Radium to Cervix. A. N. Arneson St. Louis.—p 1
- X-Ray Aspects of Pneumoconiosis L. H. Garland San Francisco—p 21
- Treatment of Carcinoma of Breast by Extirpation of Tumor and Roentgen Irradiation Preliminary Results J. Borak Vienna Austria—p 33
- Eventration and Hernia of Diaphragm as an Incidental Finding W. S. Newcomet and E. W. Spackman Philadelphia—p 36
- Absorption of X-Rays by Lead Glasses and Lead Barium Glasses G. Singer Washington D. C.—p 44
- *Esophageal Gastric Carcinoma Successfully Treated by Protracted Fractional X-Ray Six Year Survival S. M. Baum New York—p 58
- Bilateral Osteochondritis Deformans Juvenilis Coxae Case (Legg Calve Perthes Disease) J. F. Elward and R. A. Bier Washington D. C.—p 63
- *Effect of X-Ray on Fine Structure of Parenchyma of Thyroid Gland (First Article) B. S. Zimnitsky N. A. Baskina and A. P. Devirz Sverdlovsk U. S. S. R.—p 68
- Calcification of Brain Cortex Associated with Hemangioma of Face and Meninges E. Lachmann Oklahoma City—p 75
- Some Lawsuits I Have Met and Some of the Lessons to Be Learned from Them (Ninth Instalment) I. S. Trostler Chicago—p 80
- Chronic Recurrent Intussusception in an Adult Associated with Adenocarcinoma of Cecum Case Report E. L. Shifflett Louisville Ky. and B. Kalayjian Indianapolis—p 96
- Roentgenologic Study of Sacrococcygeal Chordoma. C. K. Hsieh and H. H. Hsieh Peiping China—p 101

Esophageal-Gastric Carcinoma Treated by Roentgen Rays—Baum reports the case of a man aged 53, first seen in March 1929. He complained of difficulty in swallowing and of substernal pain of about one year's duration. About a year previously, the patient had had a hemorrhage from the stomach vomiting a large amount of blood. Thereafter because he began to notice progressive difficulty in swallowing particularly solid foods he was on a fluid diet. The patient lost about 10 pounds (45 Kg.) in the last three months with considerable loss of strength. Roentgen examination of the gastrointestinal tract showed a marked dilatation of the lower end

of the esophagus, and distal to this a tumor mass involving the esophagus and cardiac portion of the stomach. A piece of tissue was removed for microscopic study, which revealed a squamous-cell carcinoma with hornification. High voltage roentgen therapy, the protracted fractional method, was immediately instituted following the establishment of a definite diagnosis of squamous-cell carcinoma. It was felt that a gastrostomy was not indicated, as the patient was able to take liquid nourishment and retain it. The technical factors were 200 kilovolts, 4 milliamperes, 70 cm. distance. Filtration was through 2 mm. of copper and 1 mm. of aluminum. Large portals averaged 400 square centimeters. Daily treatments were given. Cross firing of the lower part of the esophagus and cardiac end of the stomach was done through upper abdominal and right and left oblique portals, each portal receiving about 5,000 roentgens. Forty-two treatments were given over a period of sixty-nine days, the average dose per treatment being 480 roentgens. Each portal was given the maximum skin toleration dose until an epidermitis resulted. Early in the course of treatment, which was effective from the beginning, the patient began to show improvement in swallowing. Soon after the completion of the treatment the patient was able to take all solid foods. He had no substernal pain or pain when swallowing. The roentgenologic examination at that time showed only a slight degree of irregularity at the cardiac end of the esophagus, corresponding to the site of the original lesion. The patient has been seen and examined in the follow-up clinic for the last six years. When seen on March 29, 1936, his weight was 170 pounds (77 Kg.), a gain of 26 pounds (13 Kg.) since treatment. The author thinks that the success in the treatment may be due to limited localized involvement, the relative ray sensitivity of the growth, and the fractioning of the dose and prolongation of the treatment.

Effect of Roentgen Rays on Parenchyma of Thyroid—Zimnitsky and his associates made experiments on the thyroids of twenty male rabbits, aged from 6 to 8 months. Fifteen were treated with roentgen rays, five being used as controls. The technic consisted of a Koch and Sterzel apparatus and the Coolidge tube, distance, 24 cm., filter, 3 mm. of aluminum, voltage, 140 kilovolts, 3 milliamperes, dose, 550 roentgens. The first lot of rabbits was irradiated three times, the second lot five times and the third lot ten times, the dose was given once a day. In order to study how time affected the development of the morphologic processes, rabbits were killed at twenty-four hours, six days, twelve days, twenty days or forty days after the treatment. For comparison, a control rabbit also was killed. The specimens of thyroid of both the treated and the control animals were fixed with Zenker's formaldehyde with the addition of acetic acid (Miloslavsky's method) and then were passed through a series of alcohol baths. They were then embedded in paraffin in the usual way. Sections of from five to six microns in thickness were stained with hematoxylin-eosin. The preparations made by this method served for a general survey of the gland conditions, but for fine cytologic examination the specimens were prepared by the Shampy method with a subsequent chromicizing, the paraffin section being from 2 to 3 microns in thickness. After removing the paraffin by treating the sections with hydrogen peroxide the authors stained them for chondrioma, using Kull's method. On the basis of their observations they reach the following conclusions: 1. The parenchyma of the thyroid has a considerable resistance to roentgen rays. 2. The fine cytologic preparation of a thyroid reveals more fully and more quickly the initial steps of the changes taking place in the cells under the action of roentgen rays. 3. Changes in the cells of a thyroid involve the protoplasm as well as the nucleus and chondrioma. In the cell protoplasm there appear vacuoles of various sizes. The chondrioma becomes coarse and granular and loses its regular distribution in the cell body, the nucleus of such a cell undergoes pyknosis, and some of the affected cells finally disintegrate. 4. The action of the roentgen rays on the organ follows the so-called island principle. 5. In addition to the foregoing changes taking place in the individual cells of the thyroid the chondrioma undergoes degenerative changes that is it becomes coarse and granular and loses its regular disposition in the cell body while the nucleus and the protoplasm

of the cell keep their morphologically normal structure. 6 Colloid in the follicles of the irradiated thyroid becomes granular, undergoes vacuolization and decreases in quantity in the organ. 7 The structure of the thyroid regenerates when a lapse of time is permitted after irradiation.

Surgery, Gynecology and Obstetrics, Chicago

63 1128 (July) 1936

- Acute Staphylococcus Osteomyelitis. Use of Staphylococcus Antitoxin as Aid to Management of Toxemia and Staphylococcemia. A. L. Joyner and D. T. Smith. Durham N. C.—p. 1.
- *Cyclical Changes in Human Vaginal Mucosa. H. F. Traut, P. W. Bloch and Alberta Kuder. New York.—p. 7.
- Histologic Study in Twenty-Four Cases of Retained Testes in Adult. J. M. Pace and H. Cabot. Rochester Minn.—p. 16.
- *Prevention of Recurrent Renal Calculi. C. C. Higgins. Cleveland.—p. 23.
- Study of Neosynephrin Hydrochloride in Treatment of Acute Shock from Trauma or Hemorrhage. C. A. Johnson. Chicago.—p. 35.
- Analysis of Mortality of Gallbladder Surgery with a Special Note on So-Called Liver Death. Based on 404 Consecutive Surgical Cases and 100 Consecutive Surgical Deaths in the New Orleans Charity Hospital. F. F. Boyce, J. R. Veal and Elizabeth M. McFetridge. New Orleans.—p. 43.
- Treatment of Carcinoma of Esophagus. C. Eggers. New York.—p. 54.
- Palliative Colostomy. D. P. MacGuire. New York.—p. 66.
- Pole Ligation in Treatment of Hyperthyroidism. F. H. Lahey and L. J. Schwalm. Boston.—p. 69.
- Double (Differential) Stethoscope. Aid in Determining Status of Individual Tubes During Performance of Rubin's Test. G. King. Shanghai China.—p. 76.
- Urinary Obstructions in Infants and Children. J. R. Caulk. St. Louis.—p. 80.
- Infra Red Photographic Study of Changing Pattern of Superficial Veins in Case of Human Pregnancy. L. C. Massopust. Milwaukee.—p. 86.
- Surgical Treatment of Acute Pancreatitis. D. deKlinkó. Budapest Hungary.—p. 89.
- Gastrojejunostomy Preoperative Decompression. R. W. McNealy and M. E. Liechtenstein. Chicago.—p. 96.
- Observations on Lymphogranuloma Venereum. Clinical Pathologic Study of Sixty Cases with Observations on Histopathology of the Frei Test. B. A. Kornblith. New York.—p. 99.
- Abortion. Statistical Analysis of 2287 Cases. C. H. Peckham. Baltimore.—p. 109.

Cyclic Changes in Vaginal Mucosa.—In the histologic variations of the human vaginal mucosa, Traut and his associates found that there is a definite rhythm which it is possible to correlate with menstruation and hence with the ovarian cycle. This cellular response is characterized by proliferation on the part of the stratum germinativum, with increase in the number of young epithelial cells in the basophilic zone of the epithelium. This response is associated with occasional mitoses and definite leukocytosis and hyperemia. The proliferative phase appears in the premenstruum, lasts six or seven days and is either completed premenstrually or extends into the menstrual phase and occasionally into the postmenstruum. It has not been observed between the seventh and twenty-first days of the cycle. Between the proliferative phases the epithelium is quiescent. Such alternation between proliferative and inactive phases has not been demonstrable in pregnancy, which seems to indicate that the rhythm of the vagina is related to the ovarian cycle. Changes in the superficial and intra-epithelial layers of the vaginal mucosa could not be correlated with the menstrual cycle. According to the observations they are quite arrhythmic.

Prevention of Recurrent Renal Calculi.—Higgins believes that the recurrence of calculi can be minimized by adherence to a properly planned diet and the addition of vitamin A in cases in which surgery has been employed. He has followed this plan for four years. Determination of the chemical constituents of the calculus and the type of crystals and sediment present in the urine is of value. The exact hydrogen ion concentration of the urine from the kidney which harbored the calculus must be determined in order that a correct diet may be instituted. In cases in which the calculus is composed of calcium and magnesium phosphates, carbonate or oxalates, the high vitamin A acid ash diet is employed in a routine manner. Calculi composed of the calcium, magnesium phosphate and carbonate form in alkaline urine, and calcium oxalate may be precipitated in quite a wide range of urinary reactions. In these cases the acid-ash diet shifts the reaction of the urine strongly to the acid side. As a general rule an excess acid-ash of from 20 to 30 cc is necessary to maintain the hydrogen ion concentration of the urine at a point from 5 to 5.2. In some instances, additional oral medication is required to maintain this level. Ammonium chloride, 0.5 Gm. in enteric coated pills is

the most efficacious drug for this purpose and causes less gastro-intestinal symptoms than other acidifying agents. When a calculus is formed in alkaline urine and when the postoperative reaction is shifted to the acid side, check of the urine for uric acid and oxalate crystals or urates is necessary to prevent the recurrence of calculi. This can be accomplished by altering the diet so that the hydrogen ion concentration of the urine is changed to the point at which urates and uric acid and oxalate crystals do not appear in the urine. While in the hospital, the patient is taught to make his own hydrogen ion concentration determinations. These determinations are made half an hour before lunch to avoid the effects of the alkaline tide or of awakening respiration changes. The hydrogen ion determination reports are presented regularly to the family physician, who then can maintain the hydrogen ion concentration of the urine at the desired level by further adjustment of the diet or by altering the medication. In the author's experience, recurrent calculi are composed most frequently of calcium and magnesium phosphates (many also contain carbonates). Such calculi develop in an alkaline urine, and their recurrence can be minimized by the use of the high vitamin A acid ash diet, which shifts the reaction of the urine strongly to the acid side. Other therapeutic procedures which have been used in the past are employed also. While the patient is in the hospital, the dietitian instructs him daily concerning the diet, explaining why certain foods are allowed and others restricted. The mere listing and prescribing of acid or alkaline ash foods does not suffice—a careful, scientific approach is necessary to determine the percentage of acid or alkaline ash in the diet which is required to maintain the proper hydrogen ion concentration level in each individual case. The incidence of recurrent calculi can be reduced to a minimum by the close cooperation between the patient and the physician. Since the author has prescribed the use of a regulated diet high in vitamin A following the operative removal of renal calculi, in addition to the other therapeutic measures usually employed, he has reduced the incidence of recurrences from 164 to 47 per cent in his cases. In many cases, eradication of the infection has been observed after the patient has been on the high vitamin A acid or alkaline ash diet for a period of from two to three months.

United States Naval Med Bulletin, Washington, D. C.

34 285-430 (July) 1936

- Review of Pathology Observed in 1018 Postmortem Examinations in Haiti. J. H. Chambers.—p. 285.
- Etiology and Management of Nephrolithiasis. A. J. Desautels.—p. 296.
- Paroxysmal Hemoglobinuria. Report of Case Followed for Thirteen Years. J. G. Dickson.—p. 300.
- The Civilian Conservation Corps. Résumé of Tour of Duty. R. A. Bell.—p. 306.
- Surface Decompression of Divers. J. A. Hawkins and C. W. Shilling.—p. 311.
- Duodenal Ulcer. J. F. Finnegan.—p. 317.
- Errors in Six Consecutive Cases of 'Appendicitis'. W. H. Michael.—p. 329.
- Influenza Lymphatica. Pentatype of Influenza. R. A. Nolan.—p. 332.
- Acromioclavicular Dislocation. R. A. Benson.—p. 341.
- Endometriosis. A. T. Walker.—p. 342.
- Treatment of Lung Abscess. H. L. Puckett.—p. 347.
- Relative Protective Value of Various Prophylactic Drugs and Methods for Control of Venereal Diseases. R. C. Boyden.—p. 354.
- Method Used in Treatment of Thirty-Three Cases of Acute Gonococcus Urethritis Without Sick Days. R. A. Vilar.—p. 359.
- Polymastia with Especial Reference to Supernumerary Axillary Breasts. Brief Review with Case Report. C. F. Storey.—p. 362.
- Short Wave Radiotherapy in Vincent's Infection. C. E. Allen.—p. 376.

West Virginia Medical Journal, Charleston

32 345-392 (Aug.) 1936

- X-Ray Therapy in Bronchitis in Children. R. C. Bond and C. H. Clovis. Wheeling.—p. 345.
- Bronchiectasis. Discussion of General Bronchiectasis and Bronchiectasis as It Occurs in Pulmonary Tuberculosis. G. D. Morse and G. C. Shinn. Hopewell.—p. 351.
- Elliott Treatment in Pelvic Infections. A. M. Dearman. Parkersburg.—p. 358.
- Surgical Aids in Medical Vascular Conditions. C. M. Caravati. Richmond Va.—p. 360.
- Heliotherapy in Treatment of Tuberculosis. C. L. Hyde. Akron Ohio.—p. 366.
- Founders Monument Address. T. M. Hood. Clarksburg.—p. 370.
- The Sterile Couple. A. P. Hudgins. Charleston.—p. 372.
- The Doctor as a Musician. E. Podolsky. Brooklyn.—p. 380.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

11 97 170 (June) 1936

- Encephalography in Investigation of Certain Cerebral Conditions in Childhood. Staff of Royal Aberdeen Hospital—p 97
 *Therapeutic Value of Vitamins A and D in Measles. Helen M. Mackay, Hilda M. Linford, M. Mitman and Mary H. Wild—p 127
 Reading Difficulties in Children. Mildred Creak—p 143
 Use of Avertin for Production of Basal Narcosis in Children. H. K. Ashworth—p 157

Value of Vitamins A and D in Measles.—Mackay and her associates investigated the effect of giving vitamin D and vitamins D and A to children under 13 years of age with measles. The 697 cases were divided into three groups. The first group served as controls and had only the ordinary ward diet, the second group received in addition 3,000 international units of vitamin D daily and the third received the same amount of vitamin D with vitamin A in addition equivalent to 6 drachms (22.5 cc.) of cod liver oil. Comparison shows that on admission the children were fairly evenly divided between the three groups as regards age, incidence of pneumonia and incidence of otorrhea. They were also evenly distributed as regards the wards in which they were treated and the medical officers under whose charge they came. A comparison of fatality rates, incidence of pneumonia, otorrhea, all complications and skin lesions developed in the hospital, as well as a comparison of duration of pyrexia or length of stay in the hospital, affords no evidence of any favorable effect exerted on the course of the disease by giving either vitamin D or vitamins D and A combined. It is pointed out that this negative result may be due to the fact that the time of observation (average under twenty days) may have been too short to demonstrate any effect from vitamin therapy, and that the treatment may have been started too late, since in 81 per cent of the cases treatment was not started until after the appearance of the rash, say till the fourth day or later in the disease.

British Journal of Children's Diseases, London

33 85 164 (April/June) 1936

- Appendicular Symptoms in Acute Infectious Diseases. G. W. Ronaldson—p 85
 Artificial Pneumothorax in Children. Record of Five Cases. C. Rolleston—p 93
 Note on So-Called Congenital Varicose Veins. F. P. Weber—p 102
 Case of Asthma and Stammering in a Boy. M. Yearsley—p 106

British Journal of Surgery, Bristol

24 1 204 (July) 1936

- Total Removal of Lung. R. M. Walker—p 7
 Hydatid Disease of Kidney. R. C. Begg—p 18
 Congenital Dislocation of Head of Radius. B. McFarland—p 41
 *Multiple Primary Epithelioma in Lymphatic Leukemia. R. J. V. Pulvertaft—p 50
 Acute Iliopsoas Abscess. R. E. Norrish—p 55
 Cleft Sternum. Case Report and Brief Commentary. G. A. M. Knight and G. H. Morley—p 60
 *Melanoma of Rectum. H. H. Lindner and W. Q. Wood—p 65
 Radical Excision of Malignant Tumors in Ethmoid Maxillary Region. W. H. G. Jessop—p 76
 Spontaneous Hemorrhage. J. A. Jenkins—p 80
 Clinical Manifestations of Spread of Carcinoma of Esophagus Observed During Life. J. E. G. McGibbon—p 86
 Intravenous Injection of Hypertonic Sodium Chloride Solution in Treatment of Conditions of Low Blood Pressure. Joan B. Walker—p 105
 Observations on Surgery of Trigeminal Neuralgia. E. P. Stibbe—p 122
 Reconstruction of Common Bile Duct. J. H. Couch—p 130
 Continuous Intravenous Infusion. P. R. Allison—p 137
 Two Cases of Ganglions in Sheath of Peroneal Nerve. V. H. Ellis—p 141
 Cretic Disease in Supernumerary Breasts. A. J. Noronha—p 143
 Significance of Lumbosacral Transitional Vertebrae. G. A. G. Mitchell—p 147
 Three Cases of Fracture Resulting from Electric Shock. H. J. Burrows—p 159
 Osteochondritis Deformans Coxa Juvenilis or Perthes Disease. Results of Treatment by Traction in Recumbency. A. L. Eyre-Brook—p 166
 *Observations on Experimental Production of Peptic Ulcer in Ileum. P. P. T. Wu and H. G. Thompson—p 183

Multiple Primary Epithelioma in Lymphatic Leukemia.—Pulvertaft says that multiple primary carcinoma of the skin occurs in x-ray workers and in xeroderma pigmentosum and is particularly associated with those whose work is in the case

of sailors, leads to constant exposure to the elements. The case of a grave digger was unusual in that the cutaneous condition was in part carcinomatous and in part a complication of lymphatic leukemia. The author points out that lymphatic leukemia is usually considered a neoplastic disorder, and the association of two distinct malignant conditions, while of interest, is familiar enough. The chief point of note in this case is its bearing on the function of the lymphocyte in malignancy. Murphy, starting from the observation that there is consistently a lymphocytic infiltration at the growing edge of a malignant neoplasm, argued that the lymphocyte provided an important barrier to the spread of tumors. There is, however, evidence leading in the opposite direction. In cutaneous epithelioma invasion occurs only in tissues where lymphocytes are aggregated, and lymphatic glands are of all organs the most prone to secondary invasion. Leukemic deposits in the skin are of frequent occurrence and take many forms. The condition is fully described by Hirschfeld. In a long series of references no mention is made of the development of malignant changes in the superficial epithelium, and it has not been possible to find any instance of such a change. It seems probable, therefore, that the primary exciting factor for the epitheliomas was the long standing condition of xeroderma. In every case, however, the epitheliomas in fact developed in areas of leukemic infiltration, and this suggests that nutritional or other changes occasioned by their presence were the last straw for the already pathologic epithelium. It is remarkable that epithelioma consistently develops in areas affected by injuries of long standing where subepithelial fibrosis is a feature, this is found in lupus, old burns and scars and syphilis. There may be a purely nutritional basis for this fact, and the leukemic infiltration may have precipitated in this case a malignant change in which a defective blood supply to the epithelium was one factor.

Melanoma of Rectum.—Lindner and Wood describe a case which they regard as a typical illustration of melanoma of the rectum. Clinically the symptoms are similar to those of adenocarcinoma of the rectum, and the condition will usually be mistaken for that lesion. Blackish discharge on the examining finger, however, might arouse suspicion as to the nature of the tumor. If the speculum is introduced, the dark color of the growth will suggest its nature. In some cases there has been pigmentation of the anal orifice, and this appearance has sometimes been confused with thrombotic external hemorrhoids. The tumor in the present case was sessile, but in 33 per cent (Loques) of the recorded cases it has been pedunculated and may even present at the anus as a polyp. A melanoma bulges into the lumen of the bowel, it shows no tendency to spread in an annular fashion, causing stenosis, as is frequently the case in adenocarcinoma. If it obstructs the bowel it does so by a process of occlusion and not of stenosis. It resembles in this respect a sarcoma of the rectum. The almost uniformly low position and the exceeding rarity of melanoma in other parts of the alimentary canal suggest that it probably arises from the skin of the anal canal. Chaher and Bonnet believed that they were able to trace the exact point of departure of the tumor from the malpighian epithelium of the anal canal. The authors were not able to do this in their specimen but observed that the tumor tissue came into the closest relationship to the squamous epithelium of the lower part of the anal canal. The evidence afforded by a study of melanoma of the rectum seems to favor the origin of this tumor from skin. Regarding the spread of the tumor, they say that regional lymph nodes which contain pigmented cells are not necessarily the seat of metastasis.

Experimental Production of Peptic Ulcer in Ileum.—Wu and Thompson point out that peptic ulcer in the ileum is almost always associated with the presence of a Meckel's diverticulum which contains heterotopic gastric mucosa in its wall. The object of this study was to reproduce the lesion experimentally and determine some of the factors concerned. Seven dogs were used for this study. The importance of acid as a factor in the development of peptic ulcer has been demonstrated. On the other hand the presence of heterotopic gastric tissue in the ileum only occasionally leads to the development of peptic ulcer. While the difference in the outcome may depend on a qualitative or quantitative variation of the abnormal

gastric secretion or of the ileac contents, the theory of diathesis or individual susceptibility to the disease may also be invoked. That the alkaline ileac contents exert a protective or neutralizing influence against the acid gastric juice is shown by the development of peptic ulcer following the deviation of the intestinal current from the vicinity of the transposed stomach. The fact that ulcers are not invariably produced by such procedures calls for no explanation so long as there exists the possibility of regurgitation of intestinal contents into the side-tracked portion. Finally the development of ulceration in the ileum after the operation of surgical duodenal drainage to produce a jejunal ulcer had been added to the other two procedures is somewhat suggestive of a reflex nervous or hormone factor. Until secretory nerves to the islands of gastric tissue in a Meckel's diverticulum have been demonstrated, a hormone mechanism like that established by Ivy and Farrell in autogenous pouches of the fundic portion of the stomach transplanted subcutaneously in dogs appears to be more important from the clinical point of view. The observations made in this study seem to lend support to the hypothesis that the development of peptic ulcer in a Meckel's diverticulum containing heterotopic gastric mucosa depends on biologic, chemical and possibly reflex nervous or hormone factors.

Edinburgh Medical Journal

43: 417-480 (July) 1936

- Diabetes Insipidus Site of Formation of Antidiuretic Hormone. J H Biggart—p 417
Clinical Recollections and Reflections. IV Surgery in General Practice Its Difficulties and Limitations. J B Simpson—p 426
Harvey and Integration. W J Stuart—p 438
Effect of Early Tonsillectomy on Incidence of Acute Rheumatism. H L Wallace and A B Smith—p 452
Gallbladder in Animals. C F W Illingworth—p 458

Glasgow Medical Journal

8: 1-48 (July) 1936

- Importance of Nasal Sinusitis in General Practice. J Harper—p 1
*Smooth Muscle Tumors of Kidney. Report of Case and Review of Literature. J F Heggie and S Alstead—p 17

Smooth Muscle Tumors of Kidney—Heggie and Alstead say that, while small mesodermal tumors of the kidney are not uncommon, fibroma, lipoma, leiomyoma and so on, larger forms of these growths are relatively rare. Smooth muscle tumors of the kidney are of two kinds: small, often multiple, growths from 2 to 9 mm in diameter, not uncommonly found beneath the kidney capsule or in the superficial cortex—incidental post-mortem observations—and the rare large solitary growths of like character arising, possibly from displaced elements of the primitive myotome, in muscle fibers of the capsular tissues or of the walls of the renal pelvis or vessels of the cortex. As a rule the latter tumors are of slow growth and may be present for many years, the patient being aware merely of a swelling and a variable amount of discomfort or minor degrees of pain in the affected side. Dysuria and frequency of micturition are occasionally complained of. The authors relate the clinical history of a woman, aged 40, in whom roentgenoscopy disclosed a tumor above the colon and not attached to the bowel. On operation a large retroperitoneal tumor was seen on the right side of the abdomen. The upper pole of the right kidney was attached to the inferior aspect of the tumor, and the kidney as a whole was so much displaced in a downward direction that its lower pole was on a level with the brim of the true pelvis. There was no definite indication as to the nature of the neoplasm and it was not considered justifiable to incise it in case it turned out to be malignant. Accordingly the ureter was ligated and divided and the tumor with the attached kidney and suprarenal gland was removed. The patient made an uninterrupted recovery and is now quite well. The histologic examination of the specimen revealed no evidence of rapid growth or of malignancy. In discussing this case of simple fibroleiomyoma of the kidney the authors say that it might be argued that in this case the kidney need not have been sacrificed and that the tumor might well have been removed with the attached portion of the renal capsule. It should be remembered, however, that at operation the exact nature of the tumor and its origin could not be decided, and, as the tumor might well have been malignant, excision of tumor and kidney

was justifiable. It is probable that this tumor grew slowly from a small tumor of the variety "quite common, though always of minute size, beneath the capsule of the kidney," but its exact origin in this instance of advanced growth cannot be definitely stated.

Irish Journal of Medical Science, Dublin

No 126 241 288 (June) 1936

- Future Hospital Policy in Dublin. H Moore R J Rowlette W Doolin, J A Harbison T G Moorhead W C Dwyer, J J McCann A A McConnell and R A Stoney—p 241
X Ray Cinematography. R Reynolds—p 267
*Peripheral Nerve Injury Due to Pressure. H L Parker—p 272
Endometrioma and Other Similar Abnormalities. J T Wigham—p 279

Peripheral Nerve Injury Due to Pressure—Parker directs attention to three clinical criteria in the diagnosis of peripheral nerve injury due to pressure: (1) Both paralysis and anesthesia, collectively or separately, appear insidiously and may progress to complete nerve destruction, (2) the patient himself is the sole cause of the damage, and (3) he has no knowledge at the time or thereafter of the damage that he is doing. The first case illustrating this is one wherein the patient's own tissues provided the trauma. A woman aged 23, came for treatment because of weakness of her left hand. Twelve months before while milking cows, she had noticed a gradual loss of strength in extension of the fingers of her left hand, starting with the little finger and spreading gradually radiad to include by turn the middle and index fingers and thumb. There was atrophy of the extensor muscles of the fingers, and a corresponding groove could be found in the forearm. The extensor muscle of the thumb also was paralyzed. Palpation over the neck of the radius revealed a thickened nodular cord assumed to be the dorsal interosseus nerve. The diagnosis of paralysis of this nerve was made. The author points out that Learmonth and Woltman developed the hypothesis that compression of the nerve occurs between the aponeurosis of the common extensor and the supinator brevis. Accordingly they made an exploration and found that the nerve had made a groove for itself across the fibers of the supinator brevis. There is another clinical phenomenon wherein the abnormality of physical constriction is a likely cause of damage to a nerve. In this connection the author reports the case of a man with meralgia paraesthetica. This disorder is due to long continued compression of the lateral cutaneous nerve of the thigh. The author shows that the erect posture has a definite influence in causing meralgia paraesthetica but that there are other postural influences on nerves in connection with the lower extremities. As an example, there is the bilateral paralysis of the muscles supplied by the common peroneal nerve appearing in workers, such as beet planters and coal pickers, who are forced to assume a squatting position for hours on end. The obvious cause in this instance is compression of the nerve by the hardened and contracted hamstring muscles. Further, the author shows that the habit of crossing the knees may be a factor in damage to the peroneal nerve. Moreover, unilateral ulnar paralysis is not uncommon in patients convalescing from surgical operations.

Journal of Laryngology and Otology, London

51: 425-498 (July) 1936

- Indications for Labyrinth Operation with Especial Reference to Acute Diffuse Destructive Labyrinthitis. R Lund—p 425
Importance of Otomicroscopy in Diagnosis and Treatment of So Called Secretory Middle Ear Catarrh. E Luscher—p 454

Journal of Mental Science, London

82: 203 290 (May) 1936

- Artificial Psychoses Produced by Mescaline. E. Guttmann—p 203
Problem of General as Against Focal Symptoms in Cerebral Lesions. Contribution to General Symptomatology. W Mayer Gross and E. Guttmann—p 222
Some Observations on Renal Function in Mental Disorder. B H Shaw—p 242
*Investigations on Problem of Immunity Against *Spirochaeta Pallida* in General Paralytics Treated with Malaria. A. Beck—p 254

Immunity Against *Spirochaeta Pallida* in Patients with Dementia Paralytica—Beck says that the improvement of dementia paralytica by treatment with malaria is known to be accompanied by the disappearance of the spirochetes from the brain. As further elucidation of the immunity problem in

dementia paralytica seemed desirable, experiments were undertaken for that purpose. No evidence was found of an antibody enhancing the phagocytosis of *Spirochaeta pallida*. The mechanism leading to the improvement of dementia paralytica is not of humoral but of cellular nature.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

43 393 608 (June) 1936

Unavoidable Hemorrhage C Berkeley—p 393

Upper Urinary Tract in Pregnancy and Puerperium with Especial Reference to Pyelitis of Pregnancy D Baird—p 435

Clinical and Pathologic Study of Salpingo-Oophoritis Due to Pyogenic Infection A McLellan—p 460

Tuberculosis of Cervix Uteri, with Description of an Original Case F H Finlaison—p 473

*Grafting of Endometrium from Uterus of One Woman Into Uterus of Another Combined with Grafting of Ovary B Solomons—p 487

Modern Theories of Dysmenorrhea D J Cannon—p 492

Interlocked Twins Treated by Cesarean Section J B Dawson—p 507

Grafting of Endometrium and of Ovary—Solomons reports the case of a married woman, aged 28, who gave a history of ovaritis as a complication of mumps and a gynecologic operation in 1930 when an ovarian cyst with the ovary was removed. She was in a highly neurotic condition, had not menstruated for three years and had lost all feeling of sex. Examination at the time (August 1933) revealed a normal pelvis. She was admitted to the hospital, and numerous endocrine products were injected without the desired effect, i. e., to bring about menstruation. July 21, 1935, the abdomen was opened. A very small uterus was found. The ovary had apparently been removed on the left side, and the ovary on the right side was slightly cystic and adherent to the broad ligament. The uterus was then split and the endometrium exposed. It was very atrophic in appearance. A piece of endometrium was dissected from a uterus removed for multiple fibroids from a woman of 34 immediately prior to the operation and was grafted into the uterus of the patient by means of fine interrupted catgut sutures. In addition a piece of ovary which was attached to the removed uterus was placed in the right rectus muscle. September 25, two months after the operation, the first menstruation ensued, lasted three days and has been regular since.

Journal of Tropical Medicine and Hygiene, London

39: 149 160 (July 1) 1936

Malaria in Portugal J N Dugdale—p 149

Destruction of Bilharzia Parasites of Man F G Cawston—p 150

39: 161 172 (July 15) 1936

Schistosomiasis Japonica Account of Outbreak J T Spiridon—p 161
Arteriosclerosis and Arcus Senilis in Young Negro Male R. H. Kampmeier—p 164

Lancet, London

1 1451 1508 (June 27) 1936

The Present Concept of Focal Infection W P Murphy—p 1451

*Treatment of Staphylococic Skin Lesions with Toxoid L E. H. Whitby—p 1454

*Oral and Parenteral Administration of Prostigmine and Its Analogues in Myasthenia Gravis L P E. Laurent and Mary B Walker—p 1457

Further Observations on Gold Treatment of Rheumatoid Arthritis S J Hartfall and H G Garland—p 1459

The Accidents of Gold Treatment in Rheumatoid Arthritis G J V Crosby—p 1463

The Cardiac Outline T S Keith—p 1466

Some Experiences in Gallstone Surgery E. R. Flint—p 1469

Prevention of Disease by Diet A G Morison S Datta and A. F. Waters—p 1472

Congenital Urethral Obstruction Anne E. Somerford—p 1473

Position of Ureters in Case of Proctodentia J L. Jona—p 1473

Subphrenic Abscess W. Broadbent—p 1474

Treatment of Staphylococic Skin Lesions with Toxoid—Whitby determined the amount of circulating antihemolysin in 100 normal persons in 200 cases of superficial lesions (carbuncles, boils, styes, sycosis and pustular acne) before and after treatment and in seventeen cases of deep-seated lesions (osteomyelitis). It would appear that the distribution of antihemolysin is the same in normal individuals as in those affected with superficial lesions. But the antibody is often definitely increased in deep-seated lesions—a useful diagnostic point in

obscure disorders of bone. The distribution of antihemolysin in normal individuals is approximately the same as that found by Parish, O'Meara and Clark. Titrations were carried out by the method described by these workers. In the 200 cases all the results followed on immunization with a total dose of 0.75 cc. of toxoid administered intramuscularly. The total dose was distributed in four doses of 0.05, 0.1, 0.2 and 0.4 cc. at intervals of one week. The 135 patients who recovered have been free from relapse for periods varying from two to fifteen months. All lesions were proved by culture to be staphylococic in origin. The most striking effects have been obtained with boils, styes and carbuncles. With regard to carbuncles, the majority have also been incised but are regarded as successes for toxoid in view of the speed of healing. In the small series of pustular acne and sycosis (seventeen cases) the toxoid did not appear to be more effective than vaccine. Only two patients with pustular acne recovered. Forman found toxoid of little or no use for the treatment of sycosis, but Connor has reported success in this disease after a long course of treatment. Thirty-seven patients exhibited temporary exacerbations during treatment. Of these, twenty-nine made rapid recovery within a few weeks of the fourth injection. Twenty-nine patients with boils recovered or improved with the dose adopted but subsequently relapsed after intervals varying from a few weeks to a few months. A second course has in most cases again procured relief, but to ensure complete freedom from infection most have had to attend for a monthly dose of 0.2 cc. of toxoid. Others have had subsequent successful treatment with a combination of toxoid and autogenous vaccine. Complete failure was experienced in twelve cases of boils. Seven of these patients were primarily bad subjects by reason of occupation or local skin disease, but five appeared to have a normal skin.

Administration of Physostigmine Derivative and Its Analogues in Myasthenia Gravis—Laurent and Walker have had eight patients with myasthenia gravis under care, who have taken dimethylcarbamate ester of hydroxy phenyl trimethyl ammonium methyl sulfite, the physostigmine derivative, for more than a year. Working independently they have had the opportunity of using analogous drugs by injection and by mouth. The results which they have obtained by the latter method are particularly encouraging, and they believe that adequate relief will be experienced from oral therapy in many mild cases while fewer injections will be required in the more severe cases. Apart from drugs of this group, some of their patients have taken ephedrine and others have taken potassium chloride in large doses daily. Much larger doses of the drug are required if the oral method of therapy is employed. From 25 to 30 mg. gave a result comparable in intensity and in duration with the result seen after an injection of 0.5 mg. During the past few months the authors have received supplies of an analogous drug, methyl-phenylcarbamate ester of 3-oxyphenyl trimethyl-ammonium-methyl-sulfate. This drug has now been used by them orally in gradually increasing doses with success. They found that 10 mg. gave a demonstrable though weak result. The doses were gradually increased up to 90 mg., which gave rise to no pain or unpleasant side action. The oral method of treatment obviates the necessity for injections, gives a more prolonged action, and it would probably be possible by giving two or three doses to keep the patient at her best for the full twenty-four hours. The longer action should prove particularly useful in severe cases in which dyspnoeic attacks are liable to occur at night after the effect of an injection has worn off. Dimethylcarbamate ester of 8-oxy-methyl quinolinium methyl-sulfate has an action nearly as intense as that of the first drug, but the duration is much shorter. Of the eight patients studied, five are somewhat better than a year ago and have suffered no relapses; two have had relapses from which they have recovered although the physostigmine derivative was continued throughout, and finally one patient died. The last had a very long history with previous attacks of dyspnoea before treatment began. She had two similar relapses after taking the physostigmine derivative and died in the latter of these while she was no longer under the influence of the drug. The treatment appears to have no direct effect on the ultimate course of the myasthenia but at the same time

it brings about improvement in the general health of the patients, as they are able to eat more adequate meals and to lead a more varied life

2:158 (July 4) 1936

- Industrial Pulmonary Disease Due to Inhalation of Dust with Especial Reference to Silicosis E L Middleton—p 1
*Inhibition and Induction of Uterine Bleeding by Means of Estrone S Zuckerman—p 9
Pustular Psoriasis: Review of Thirty Two Cases J T Ingram—p 13
Right and Left Ventricular Failure: Study of Circulation Time and Venous Blood Pressure P Wood—p 15
Trichomonas Vaginitis: Its Incidence and Coexistence with Gonococcal Infections A J King W N MacCall and I N O Price—p 18

Uterine Bleeding and Estrogenic Substance—Zuckerman confirms by two experiments the fact that bleeding occurs during continuous theelin injections only when the amount given daily is a threshold or subthreshold dose. One monkey has never bled in the course of 220 days during which it has been given 1,000 international units of theelin daily, another, on 100 international units of theelin daily, bled between the forty eighth and fifty-second day of a course of injections which has thus far lasted eighty-nine days. In the light of these facts and in view of the accepted relationship between rat and international units, it is plain that a reasonable interpretation of Hisaw's two experiments is that his monkeys were being injected with threshold doses of theelin. It thus appears that the data which have been widely interpreted as showing that uterine bleeding is stimulated as a direct effect of the hormone during the course of theelin injections are insufficient to justify this conclusion. On the contrary most of the available facts are amenable to interpretation in terms of the established observation that uterine bleeding occurs only when the level of theelin falls below a threshold value. There can be little doubt that the present acceptance of the view that theelin during its administration normally and actively stimulates uterine bleeding is unjustifiable, and that, when it is used as a step in argument, it can only help to lead to hypotheses of the nature of the menstrual cycle (e. g., Robson and Henderson) that do not agree with the facts about the cycle derived from the experimental study of primates. The available evidence does not suggest that estrogenic substance actively stimulates uterine bleeding but still favors the view that bleeding is an event which marks the cessation of the hormone's action.

Medical Journal of Australia, Sydney

1:835-866 (June 20) 1936

- Modern Outlook on Nutrition N M Gutteridge—p 835
*Treatment of Circulatory Failure H W Wunderly—p 840
Surgical Aspects of Goiter Problem. H R G Poate—p 842
*Ratio of Large to Small Lymphocytes in Persons Exposed to Lead Hazard D O Shiels—p 847
Cerebral Arteriography L C E Lindon—p 849

Treatment of Circulatory Failure—Wunderly says that it is convenient to divide the whole cardiovascular system into central and peripheral parts when considering the treatment of circulatory failure. Clinically, it is essential to know whether one is faced with a condition of central or heart failure or of peripheral failure. Central failure is usually accompanied by increased blood volume, peripheral failure by diminished blood volume. Following the classification of Wollheim, cardiac failure was divided into plus decompensation, which is characterized by dyspnea, orthopnea, cyanosis of the lips and the acral parts and increased venous pressure and minus decompensation, in which there is low blood volume, no dyspnea on lying down, patchy skin cyanosis and low venous pressure. The acute cases of minus decompensation correspond to circulatory failure in the severe infections. Minus decompensation is a peripheral circulatory failure, not a failure of the heart itself. In it four conditions are found (a) decreased blood volume and insufficient venous return flow, (b) concentration of the blood, (c) decreased blood chlorides and (d) low venous pressure. The treatment of peripheral circulatory failure is the treatment of these four conditions. The most satisfactory method of increasing blood volume is by introducing fluids intravenously. These should be administered at the rate of 2 or 3 cc. per minute and large quantities are usually necessary. Blood is the best fluid. 6 per cent acacia solution is useful if the hemoglobin is not below 25 per cent and up to three or four liters a day should be given. The cause of the hyperpyrexial reaction is

discussed and methods of preparation of solutions and apparatus are mentioned. The drugs that are recommended to increase blood volume are strychnine, camphor, caffeine, epinephrine and solution of posterior pituitary.

Lymphocytes in Persons Exposed to Lead—Shiels points out that it has usually been accepted that the examination of white blood cells gives little information of value with respect to lead poisoning but that in a recent highly suggestive and interesting paper by Annie E. Ferguson and Thomas Ferguson it has been shown that the ratio of large mononuclear lymphoid cells to small lymphocytes has a closer relationship to the clinical condition than the stippled cell count, which has so far been regarded by most authorities on lead poisoning as of prime importance. Stippled cell counts depend to a considerable extent on the type of stain used, the technic of staining and the visual acuity of the observer, whereas the determination of the ratio of large to small lymphocytes is much less dependent on personal factors or on technic. The Fergusons pointed out that the precise differentiation between monocytes and large lymphocytes may be difficult, and they therefore included both types in the classification of large mononuclear lymphoid cells. The author did the same in the present investigation. He found that absorption of lead causes an increase in the ratio of large lymphocytes and monocytes to small lymphocytes. A fall in this ratio below 2:1 while the subject is exposed to the hazard is associated with definite symptoms of lead poisoning usually of sufficiently severe nature to cause incapacity. Generally speaking, the more severe the case, the lower the ratio. The magnitude of this ratio is more closely associated with the clinical condition than is the stippled cell count and it is a simple and useful indication by which to judge of the imminence or otherwise of lead poisoning and is an aid to diagnosis.

Tubercle, London

17 433-480 (July) 1936

- Critical Review of Dispensary Organization in France with Especial Reference to Administrative County of the Seine. R H Hazemann—p 433
*Diagnosis of Cavities in Pulmonary Tuberculosis by Means of Tomograph J B McDougall—p 452
Congenital Heart Disease and Pulmonary Tuberculosis S R Gloyne—p 455

Diagnosis of Cavities in Pulmonary Tuberculosis by Means of Tomograph—McDougall asserts that tomography presents a further advance on all previous roentgen technic and that it is of special interest in defining cavities that may be obscured from direct vision in the usual anteroposterior films which form the great majority of all pictures taken in chest clinics. The tomograph can take actual sections of the chest at any level although for ordinary purposes three sections (ventral, dorsal and medial) are sufficient as a rule. The fact that the rib shadows are almost eliminated from the sections is of great importance, the sternum and the vertebral column are not shown as bony structures at all, although in dorsal sections the outer ends of the ribs and the outline of the vertebral column may appear. This unusual result is obtained by a simple but ingenious device that allows the tube and the film holder to move in contrary directions during the exposure, which is normally of one second. The secret of the success of the tomograph mechanism lies in the fact that the tube and film describe an arc of about 45 degrees during the exposure, this ensures that all objects in the plane of the chest which is being photographed are reproduced on the film, and that all objects lying outside this plane are projected away from the film. The arc can be lessened and in this way it is possible to obtain sections from some 3 mm thickness up to sections about 3 cm in thickness. If it is decided to take a picture through the entire thickness of the chest, the tube and film are kept stationary and one gets the usual anteroposterior picture without any elimination of the bony thorax. In a case of advanced tuberculosis with tubercle bacilli in the sputum the usual anteroposterior film shows a large cavity in the left upper lobe with two stout fibrous strands traversing the lower part of the cavity, but a ventral tomograph shows that the space in the left upper lobe is clear and that it ascends to the extreme apex. The medial tomograph shows what appears to be the origin of the fibrous bands seen in the anteroposterior film and there is still no evidence of a cavity wall in the left upper lobe. The space is, in fact, particularly

clear and gives the impression that it is not a pulmonary cavity but a localized pneumothorax, and that the dense shadow on the inner side is collapsed lung. On the right side of the medial picture, however, there is a veritable chain of cavities that are not in the anteroposterior picture. In the dorsal tomograph section the undoubted nature of the fibrous bands is made clear, for they are actually thick adhesions coming from the collapsed lung to the chest wall. On the right side of this section there is a large cavity with a dense upper wall.

Archives de Médecine des Enfants, Paris

39 393 504 (July) 1936

- Histophysiologic Mechanisms of Hypophysis A. Policard—p. 393
Hypophysis and Prepuberty G. Mouriquand—p. 407
Diabetes Insipidus and Hypophysis in Children P. Lereboullet and J. Bernard—p. 421
Technic of Hypophyseal Ophotherapy in Children P. Lereboullet—p. 442
Tumors of Hypophysis Mme. J. Roudinesco—p. 450
Therapeutic Indications of Tumors of Hypophysis P. Puech and L. Stuhl—p. 461

Diabetes Insipidus and the Hypophysis in Children.—

Without discussing in great detail the problem of diabetes insipidus and the hypophysis, Lereboullet and Bernard merely report several observations of diabetes insipidus in children and from these observations attempt to draw certain pathogenic clinical and therapeutic conclusions. In one case a typical diabetes insipidus developed during three years in a young boy without any accompanying sign of hypophyseal disorder being noted. The dechloridizing regimen and especially the administration of hypophyseal extract were effective, but only briefly, since it was necessary to repeat the injections four times daily. Even thus it was not always possible to suppress completely the abnormal polyuria. Hypophyseal medication subcutaneously seemed to be the only satisfactory method of treatment and was almost specific in its character. Observations of the disease in two other children gave similar results. They believe it possible to conclude therefore that diabetes insipidus in a child is most commonly apparent as a pure syndrome characterized especially by polyuria, polydipsia and some accessory cutaneous disorders and resulting in a loss of weight which can develop into a true cachexia. In the majority of cases objective signs of the hypophyseal lesion cannot be found. Complete integrity of the eyes of the sella turcica and of the cerebrospinal fluid is found repeatedly. It is indicated, nevertheless, according to the authors that the long continued administration of posterior hypophyseal extract to infants afflicted with diabetes insipidus carries with it the same therapeutic specific effectiveness that insulin does for diabetes mellitus.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

52 1107 1149 (July 6) 1936 Partial Index

- Nicholas Favre Disease and Erythema Nodosum P. Carnot, R. Cachera and Mallarme—p. 1108
Rheumatic Erythema H. Grenet—p. 1117
Painful Knee H. Dufour and Brechet—p. 1122
So-Called Step-like Pleurisies Dumitresco-Mante and Ciocanescu—p. 1130

Rheumatic Erythema—Grenet reports a circinate skin eruption in two children suffering from rheumatic fever. The eruption in both instances was characterized by its temporary nature, lack of itching, sharply limited red border and sometimes by its rose-like ring. From observation of the course of the eruption in these two patients he believes that marginal erythema in discoid plaques and annular erythema are merely two aspects of the same erythema.

Journal de Médecine de Lyon

17 455-482 (July 5) 1936

- Critical Study of Experimental Cerebral Embolism Hermann and J. Dechaume—p. 455
Tuberculous Bacillema and Erythema Nodosum G. Graziosi—p. 473

Experimental Cerebral Embolism—Hermann and Dechaume observed the effects of experimental carotid induced embolization and the resultant cerebral embolism on twenty-three dogs. The classic view that carotid embolization produces a cerebral embolization and a cerebral softening if the animal survives is well known. They succeeded in showing that in the cases in which embolization was rapidly fatal the embolism was encephalobulbomedullary. The choroid plexus

and the hypophysis also were involved. Softening is not visible, but the lesions are complex and microscopic or macroscopic hemorrhages are especially conspicuous. The known physiologic and anatomic facts suggest the complexity of the experiment apparently as elementary as carotid embolization. Certainly the experimental embolism thus produced must be viewed with caution and be subject to revision. Such experiments demonstrate the possibility of producing paroxysmal hypertension by means of affecting directly the vasomotor centers in the cerebral-spinal axis, medullary centers, bulbular centers and, doubtless, other infundibulotuberian centers. The reality of such arterial hypertension by directly affecting the central nervous system is established. The pathogenesis of hypertension of cerebral origin observed in man in the course of cerebral vascular accidents may thus be revised. Finally the need for accurate physiologic and anatomic control of such experimentation is especially indicated by the results of such experimental methods.

Presse Medicale, Paris

44 1129 1144 (July 11) 1936

- Anatomoroentgenologic Study of Myocardial Infarction Three Cases D. Routier, R. Heim de Balsac, F. Joly and J. Lemant—p. 1129
Treatment of Severe Stenosis of Lower Third of Esophagus J. Guze—p. 1133
Histologic Diagnosis in Identification of Endemic Leprosy J. Queenard des Essarts and G. Lefrou—p. 1136
Mikulicz's Disease P. Aboulker and A. Dreyfuss—p. 1139
Peruvian Verruca G. O. Hercelles—p. 1142

Stenosis of Lower Third of Esophagus—Guze reports sixteen cases of traumatic cicatricial stenosis of the lower third of the esophagus after the swallowing of a caustic liquid and three cases of inflammatory stenosis following old spasms. The classic treatment by gastrostomy has many disadvantages. The simple spasmodic contractures can be cured or at least improved by dilation with different sized bougies. In the inflammatory types of stenoses however, this treatment is unavailing. In such cases, circular electrolysis is of great help in allowing later dilation. In all those patients with gastrostomy observed by the author, it was possible by means of the treatment mentioned to close the gastrostomy wound and return to a normal method of feeding.

Schweizerische medizinische Wochenschrift, Basel

66 757 776 (Aug. 8) 1936 Partial Index

- Lymphatic System W. Gloor Meyer—p. 757
Results of Exercise in Treatment of Unilateral Paralysis of Larynx R. Luchsinger—p. 760
Serologic Changes in Patients with Liver Disease R. Freund—p. 762
Potent Ester of Testosterone K. Miescher, A. Weiststein and E. Tschopp—p. 763
Clinical Aspects of Shock Effect of Lightning on Human Organism Chladkoff and Ordinskaja—p. 764

Serologic Changes in Patients with Liver Disease.—

Freund calls attention to the fact that certain characteristics of human serum are closely related to the hepatic function. Continuing former studies, he decided to investigate two properties of human serum that are largely dependent on the function of the healthy liver: (1) the constancy of the complement content and (2) its trypanocidal action. He made tests on the complement content of the serum of patients with and without hepatic disorder and gained the impression that it is dependent on a partial function of the liver and that this partial function permits a conclusion about the condition of the hepatic parenchyma. The curves obtained by serial tests on patients during certain disorders permit a conclusion as to whether the hepatic parenchyma has been impaired or is in a stage of restitution. The serum of patients with hepatic disease frequently shows a considerable reduction in the trypanocidal power. It was found that the trypanocidal titer is closely related to the functional condition of the liver. 2. The trypanocidal substances or their preliminary forms are formed chiefly in the liver. 3. There is a parallelism between the complement titer and the trypanocidal titer. Thus it appears that the trypanocidal capacity of the human serum and its dependence on the liver represent also a partial function of the liver and one which is distinct from that manifested in the complement. In tests on 200 serum from patients with hepatic disorders and on a much larger number of controls the author was able to convince himself again and again that the trypanocidal action of the

serum is closely connected with a not yet identified partial function of the liver. He emphasizes that the described serologic functional tests are important for the prognosis particularly as regards the predisposition to infections. In tests on animals he found that those with impaired liver have a greater susceptibility to subsequent infections than have normal animals.

Archivio per le Scienze Mediche, Turin

62 196 (July) 1936

- *Adventitial Diffusion of Tuberculosis Especially Tuberculous Pulmonary Perilobulitis and Tramitis M. Fenicia—p. 1
- Orchiepididymal Tuberculosis C. Giovanni—p. 25
- Liposarcomas Cases. A. Picco—p. 47
- Functions of Liver in Chronic Bone Suppuration R. S. Douglas and L. Morasca—p. 57
- *Behavior and Significance of Hymans van den Bergh Reaction in Heart Diseases B. P. Giordano—p. 81

Adventitial Diffusion of Tuberculosis—Fenicia states that the lymph nodes of the hilus of the lung are the first structures involved in the process of chronic pulmonary tuberculosis. From the nodes the infection spreads to the parenchyma of the organ through the lymphatic vessels and the tunica adventitia of the pulmonary arteries and veins and of the bronchi. The tunica adventitia of these structures belongs to the reticulo endothelial system because of its structure, and to the lymphatic system because of its capillary and humoral circulations. The selective localization of chronic tuberculosis in the tunica adventitia of the pulmonary blood vessels with the consequent hyperplastic reaction results in the development of tuberculous hilitis in certain cases of which a reaction of sclerosis takes place and the sclerosed tissue marks the contours of the interstitial pulmonary tissue (tuberculous tramitis) or those of the pulmonary lobes (tuberculous perilobulitis). The anatomic and histologic study of the lung in these conditions show the special aspects of the organ. The roentgenogram shows a fine network of lines of increased density covering the field of the lung. The shadows of the network correspond to the early tuberculous infiltration of the spaces that limit the lobes of the lung. The roentgenographic anatomic and histopathologic aspects of the lung in tramitis and perilobulitis confirm the statement that pulmonary tuberculosis propagates itself from the hilus to the apex of the lung. Certain forms of chronic tuberculosis of the liver (the so called tied up cirrhosis of the French authors) and of chronic tuberculosis of the uterus evolve in a form similar to that followed by tuberculous perilobulitis. The anatomopathologic pictures of the structures in these conditions are analogous to those of the pulmonary process. These facts show that the tunica adventitia of the blood vessels of the liver and the uterus is the route of propagation of chronic tuberculosis in these organs and that a specific reaction of sclerosis takes place during the process, as is the case also in pulmonary perilobitis.

Van den Bergh Reaction in Cardiac Patients—Giordano made determinations of the bilirubin in the blood of patients suffering from decompensated heart disease by the van den Bergh reaction. He concludes that the quantity of bilirubin in the blood and the intensity of the reaction, whether direct or indirect, run parallel to the clinical evolution of the heart disease. Bilirubinemia and the intensity of the test increase with the aggravation and decrease with the improvement of the heart disease, especially in patients with decompensation of the right ventricle. The appearance of a direct reaction associated with increase of the bilirubin in the blood has an unfavorable prognostic significance for the patient's life.

Rivista Italiana di Ginecologia, Bologna

19 213 310 (May) 1936

- Peripheral Venous Pressure in Pregnancy and Puerperium G. T. Rao—p. 213
- Cesarean Section in Diffuse Purulent Peritonitis from Appendicitis M. Bufalini—p. 241
- *Biologic Action of Red and Ultraviolet Radiations on Substances in Urine of Pregnant Women R. Bolaffi—p. 249
- Interstitial Pregnancy Cases G. Micale—p. 269
- Influence of Roentgen Rays on Pregnancy Urine Evolution of Friedman Test Made with Irradiated Urine R. Bolaffi—p. 295

Effect of Irradiation on Substances in Urine of Pregnancy—Bolaffi's experiments were made on virgin rabbits previously laparotomized and placed in two lots for investigation of the effects of red and ultraviolet radiation on the bio-

logic activity of the gonadotropic and estrogenic substances contained in the urine of pregnant women. The author concludes that red radiations have no action on the gonadotropic substance, whereas they have a remarkable stimulating action on the estrogenic substance. Ultraviolet radiations have no action on the estrogenic substance, whereas they have an action on the gonadotropic substance by which the biologic activity of the latter is greatly diminished. The activation of the biologic action of the estrogenic substance by the red radiations and the weakening of the biologic action of the gonadotropic substance by the ultraviolet radiations are due to chemical and physical changes of the substances especially related to variations of their colloidal stability through photochemical and photobiologic effects of the radiations. The results of the author's experiments point to a subject of practical importance: the sensitivity of gonadotropic substance to ultraviolet radiations should be kept in mind with respect to the harmful influence that light may cause on the urine of pregnant women. When the latter must be used to make quantitative determinations for scientific or clinical diagnostic aims, it is advisable to use the urine as soon as possible after its elimination. If this is not possible the urine should be kept in a dark place to prevent alterations in the content or nature of the gonadotropic substance. The same precautions are advisable for the conservation of preparations for therapeutic purposes.

Anales de Medicina Interna, Madrid

5: 603 704 (July) 1936

- *Metabolism of Creatine in Muscular Dystrophy A. Fernandez Cruz—p. 603
- Dysionic Study of Experimental Gastritis and Castric Ulcer Alterations of Mineral Metabolism J. A. Sánchez Martínez—p. 629
- Perforation of Gastroduodenal Ulcer M. Moya—p. 669
- Does Chlorosis Exist? G. Marañón—p. 677

Metabolism of Creatine in Muscular Dystrophy—Fernandez Cruz says that there is a disturbance of the metabolism of creatine in progressive muscular dystrophy which appears as a characteristic syndrome of pathologic creatinuria and a diminished elimination of creatinine. The administration of aminoacetic acid (glycocoll) to these patients for as long as it is necessary, produces a temporary increased creatinuria with consequent diminution of the elimination of the substance. Creatine, administered by mouth to these patients, is followed by elimination of the substance in proportion to the seriousness of the disease. The reaction shows that there is a creatinuric diabetes or intolerance to creatine in the condition. The administration of creatine by mouth can be used as a test for ascertaining both the degree of tolerance to creatine in patients suffering from muscular dystrophy and the condition of the muscular metabolism in patients suffering from myopathic pathologic conditions. In patients suffering from Addison's disease there is an abnormal elimination of creatine by the urine and a diminished elimination of creatinine. The latter is found in ninety-six out of ninety-seven determinations made. Creatine, administered to patients suffering from Addison's disease, causes an increase of creatinuria and slight changes of creatinuria. The results of the test point out that, in patients suffering from asthenia in Addison's disease, qualitative changes of the muscular metabolism develop that are different from those which take place in muscular dystrophy. The hypofunction of the hypophysis can produce a muscular syndrome associated with specific alterations of the metabolism of creatine that are characterized by pathologic creatinuria and intolerance to exogenous creatine. In patients suffering from muscular dystrophy injectable hepatic extracts increase the tolerance of the patients to creatine and decrease spontaneous creatinuria up to complete disappearance of the latter. Injectable adrenal extract administered to these patients does not produce modifications of creatinuria. In patients suffering from progressive muscular dystrophy the metabolism of carbohydrates is disturbed. Basal lactic acidemia is high and still higher after physical exercise. The content of phosphagen, glycogen and lactic acid in the dystrophic muscles, studied by biopsy, is greatly diminished. Histopathologic studies of the muscles in progressive muscular dystrophy show processes of destruction of the muscular tissues which are largely replaced by fatty tissue within inflammatory foci and areas of well preserved muscular tissues.

Prensa Médica Argentina, Buenos Aires

23 1783 1830 (July 29) 1936 Partial Index

- *Voluntary Apnea in Chronic Respiratory Insufficiency M. R. Castex
E. L. Capdehourat and C. C. Devoto—p. 1783
- Great Ascites from Hepatic Cirrhosis in Pregnancy J. C. Lascano and
J. C. Pereyra—p. 1794
- Therapeutic Applications and Clinical Results of Sympathectomy
(Olivares Method of Chemical Anesthesia in Ophthalmology)
E. Lluesma Uranga—p. 1800
- Vaginal Cesarean Section Twice Repeated As a Result of Detachment
of Normal Placenta in Early Pregnancy Case J. Bazan and A.
González Collazo—p. 1806
- Retrocaval Hydatid Cyst Case F. E. Grimaldi—p. 1808

Voluntary Apnea in Chronic Respiratory Insufficiency

—Castex and his collaborators made determinations of the time of voluntary apnea in patients suffering from chronic respiratory insufficiency due to cyanotic bronchopneumocardiac disease. Apnea, especially following deep inspiration, causes slight bradycardia. The arterial pressure slightly increases at the end of the test of voluntary apnea, following inspiration, whether or not preceded by physical exercise. Apnea during rest and with the patients placed in the dorsal position has an influence on the development of the P wave in the electrocardiogram. In apnea, following deep inspiration, the altitude of the P wave is greatly increased, whereas in that which follows expiration the wave rises only slightly above the iso-electric line. An intravenous injection of 1 mg. of atropine (paralyzing dose) makes less remarkable the differences in the development of the P wave in apnea following inspiration and expiration, respectively. The results demonstrate a predominance of the vagus nerve as cause of the variations of the P wave in apnea following expiration and a predominance of the sympathetic in apnea following inspiration. The great elevation of the P wave during inspiration in comparison with that which occurs during expiration indicates good condition of the auricle and can be taken as an index for estimation of the auricular function.

Monatsschrift für Kinderheilkunde, Berlin

66 1 106 (June 2) 1936

- *Question of Fat as Cause of Digestive Disturbances in Artificial Feeding of Nurslings U. S. Ružičić—p. 1
- Occurrence of a Psychosis (Korsakow's Syndrome) After Pharyngeal Diphtheria Gertrud Zimmermann—p. 4
- Respiratory Arrhythmia in Children with Heart Disease K. Kuhne—p. 7
- *Action of Nonspecific Factors on Agglutination Titer in Dysentery R. Martyn—p. 16
- Congenital Diffuse Rhabdomyomatosis of Heart in Two Brothers. W. Pauli—p. 22
- Sino-Auricular Block in Child with Diphtheria P. von Kias—p. 30

Fat as Cause of Digestive Disturbances in Nurslings

—Ružičić directs attention to the alimentary disorders caused by cow's milk. He conducted experiments to determine whether the fat as such or together with the other constituents of cow's milk causes the nutritional disturbances. A tabular report of the results of the experiments indicates (1) that nurslings tolerate an unusually large amount of cow's milk when its fat content has been replaced by the fat of mother's milk and (2) that the fat of cow's milk causes no disturbances when it is given in previously defatted mother's milk. The author says that, to the extent that observations on two cases permit conclusions it may be said that alimentary disturbances do not result from the fat of the cow's milk as such but only when it is given together with the other constituents of cow's milk.

Agglutination Titer in Dysentery—Martyn points out that the agglutination tests, which are employed for the serologic diagnosis of dysentery, have been highly evaluated by some but criticized by others. The agglutination can be influenced by a number of nonspecific factors. The author tested the blood serums of eighty nurslings and children who were free from dysentery for agglutination of the A, B, D and H strains of the Flexner Y group and of the Shiga dysentery bacillus. On the whole, he found in the different persons similar agglutination values. The H agglutinin usually had the highest values. In children in whom it could be proved clinically and bacteriologically that they had had dysentery, the agglutination values were qualitatively and quantitatively the same as in nondysenteric children from six to twelve months after the dysentery. Various irritations such as blood transfusion or the injection of certain substances may produce a considerable increase in the agglutinins, however, in these cases the clumping

is less compact and can readily be shaken apart. Moreover, this agglutination has no dysenteric character, there is no sign of a predominance of the agglutinins of the D and Shiga types. The agglutinins that appear under the influence of the aforementioned nonspecific irritants, as well as the increase of the agglutinins, are not identical with the processes that take place in specific agglutination.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart

113 1 106 (June 23) 1936

- Hydrosalpinx O. Frankl—p. 1
- Intestine and Genitals Report About Some Diagnostically Difficult Cases K. W. Schultze—p. 21
- *Tubal Insufflation for Treatment of Sterility H. O. Kleine—p. 31
- *Prevention and Raising of Premature Births H. Nevinny—p. 37
- Management of Birth in Narrow Pelvis Following Rejection of Cesarean Operation G. von Glinckh—p. 66

Value of Tubal Insufflation in Sterility—Kleine bases his evaluation of tubal insufflation on observations made in 146 cases. He stresses that tubal insufflation requires hospitalization, for its ambulatory employment or its use in general practice involves danger. He also rejects the therapeutic use of the method. A causal connection between conception and tubal insufflation can be asserted only if the following factors apply to the case under consideration: at least two years' existence of the sterility, conception not later than six months after the tubal insufflation, and exclusive use of insufflation without resort to other measures, such as curettage, the Alexander-Adams operation or laparotomy. The author thinks that the fact that after a positive insufflation conception takes place within the first six months in only 2 per cent of the cases but after negative insufflation in 14 per cent proves that tubal insufflation has no diagnostic value.

Prevention of Premature Births—Nevinny says that extensive antepartum care is of great importance in the prevention of premature births. By means of it the relative frequency of immature single births, with extremely low weight, can be considerably decreased. However, since even with extensive antepartum care there will occur a considerable percentage of premature births, it remains important to find the best methods of raising premature infants. In order to understand better the most suitable methods of care during the first period after birth, the author discusses the metabolism during this time, particularly the protein and sugar metabolism and the initial loss of weight. His studies brought proof for the great fluid requirements of premature births and he also observed that the fall and rise in the blood sugar curve runs parallel with the weight curve. In the treatment of premature infants he obtained good results with subcutaneous infusions of a slightly hypotonic solution of sodium chloride with the addition of a heart stimulant and of dextrose as a supply of energy. He illustrates the efficacy of this method by citing cases.

Zeitschrift für klinische Medizin, Berlin

130: 275 408 (June 30) 1936

- *Relations of Experimental Agastric Anemia to Pernicious Anemia J. Bence—p. 275
- *Copper Content of Blood in Anemias J. Bence, J. Lendvai and J. Székely—p. 299
- Spectrographic Studies on Roentgen Sensitivity of Gastric Juice and of Several Water Soluble Vitamins L. Karczag and M. Hanák—p. 310
- Clinical Electrocardiography Studies on Behavior of Electrocardiogram During Change from Reclining to Erect Position G. Schlonka and H. Reindell—p. 313
- Electrocardiogram During Agonal Stage in Human Subjects T. Mizuo, N. Maeda, T. Tanaka, K. Noma and S. Itoh—p. 332
- Electrical Conductivity of Human Skin F. Brauch—p. 338
- *Influence of Defects of Cardiac Valves on Life Expectancy R. Friedmann—p. 382

Experimental Agastric Anemia and Pernicious Anemia—In his observations on hogs, Bence found that following total gastrectomy there develops during the first stage, which lasts for about a year, an anemia with microcytic, hypochromic blood picture, largely resembling that of chloranemia. Later, during the second or third year there develops a progressive, megalocytic, hyperchromic anemia which is combined with leukopenia, thrombopenia, icterus and urobilinogenuria. When the gastrectomized animals live long enough to enter the macrocytic stage, there develops in the medullary portion of the large tubular bones a severe red hyperplasia which entirely replaces the fat marrow. This hyperplasia shows embryonal character.

and correspondingly a severe, megalocytic erythropoiesis. The blood picture and the changes in the bone marrow are like those in pernicious anemia. In an animal in which at the age of 3 months 3 meters of the ileum and of the jejunum had been removed, the number of erythrocytes increased greatly as did also the hemoglobin, whereas the number of leukocytes remained unchanged. This experiment seems to indicate that the lower portion of the small intestine has no influence on the blood formation.

Copper Content of Blood in Anemias—In studies on the copper content of the blood of anemic patients, Bence and his associates found that it is increased, whenever the functional activity of the bone marrow is intensified, regardless of whether the existing disorder is pernicious anemia, secondary anemia, leukemia or polyglobulism. The causal factor of this increased erythropoiesis is unimportant. The increase in the copper values is not a peculiarity of pernicious anemia, for the values change during this disorder with the decrease and increase in the number of erythrocytes. The fluctuations in the copper content are closely related to the increased or reduced activity of the bone marrow. Immediately after a hemorrhage the copper content is low because during this stage of anemia the erythropoiesis of the bone marrow has not yet become completely established. A certain time is required until this mechanism becomes active. There are likewise high copper values in leukemia, during which an increased bone marrow function must be assumed. The copper values are increased whenever there is a numerical increase in the development of the erythropoiesis, and from this the authors conclude that copper or a substance containing copper is the chief factor in the numerical production of blood corpuscles. They assume the existence of two active principles in the erythropoiesis, in that copper directs the numerical production whereas the active principle of the stomach directs the activity of the bone marrow in the production of qualitatively normal erythrocytes.

Defects of Cardiac Valves and Life Expectancy—Friedmann compared the mortality rate of patients with heart disease with that of the population on the whole. The index of the latter was designated as 100. The excess mortality for all patients with lesions of the cardiac valves was plus 164 per cent, that of patients with mitral defects was plus 143 per cent. The highest excess mortality of the cardiac lesions was observed in patients with combined valvular defects, in these it amounted to plus 226 per cent. In patients with aortic defects the excess mortality rate was plus 88 per cent, the lowest of all lesions of the cardiac valves. The mortality from all valvular lesions was greatest in both sexes during the fifth decade of life. However, in patients with mitral insufficiency it did not reach the peak until the sixth decade. The author investigated also whether the life expectancy of patients with cardiac defects was dependent more on the age of the patient or on the duration of the cardiac defect. He found that the peak of excess mortality during the fifth decade was largely independent of the time of acquisition of the cardiac defect. However, it was quite noticeable that the degree of enlargement of the heart was of considerable influence on the life expectancy of patients with valvular lesions.

Zeitschrift für Tuberkulose, Leipzig

75 225 304 (June) 1936

- *New Methods of Surgical Collapse Therapy in Pulmonary Tuberculosis K. Werwath—p 225
- *Significance of Pneumoperitoneum in Treatment of Pulmonary Tuberculosis T. Rehberg—p 230
- Mutation of Tubercle Bacillus H. Hoffmann—p 238
- Immunobiologic Processes in Infectious Diseases Particularly in Tuberculosis Kieckenberg—p 246
- Serum Coagulation Reaction of Weltmann F. Fuente-Hita and E. Jubes—p 255
- Influence of Age on Serum and Tissue Changes in Tuberculosis J. Zeyland and E. Piasecka Zeyland—p 258

New Collapse Therapy in Pulmonary Tuberculosis—Werwath points out that artificial pneumoperitoneum was used at first only for diagnostic purposes but later was resorted to also in the treatment of severe cases of intestinal or peritoneal tuberculosis. He was induced to try it in pulmonary tuberculosis, because he observed that in pregnant women the increased abdominal pressure often improves the tuberculous processes of the lung. He reasoned that in cases in which

pneumothorax and phrenic exeresis failed to produce a complete collapse an additional compression of the diaphragm from below would help to produce it. He also hoped that the use of the pneumoperitoneum would reduce the number of cases in which extensive thoracoplastic interventions would be necessary and, on the other hand, might yet help some of the patients whose general condition is so unfavorable that a thoracoplastic operation would not be possible. In discussing the technic of artificial pneumoperitoneum, the author emphasizes that it is much less dangerous than an extensive thoracoplastic intervention. To be sure, particularly in the first filling, caution is advisable, in that not more than 500 or 600 cc of air is introduced into the abdomen. Depending on the condition of the heart, a preliminary treatment with cardiac stimulants might be advisable. When pneumoperitoneum is done the patient should be fasting and the intestine empty. It is advisable to introduce an intestinal tube about one hour before the intervention, so as to remove intestinal gases. An injection of morphine-atropine is given thirty minutes before. The local infiltration of the abdominal walls must be adequate so as to obviate reflex movements on the part of the patient and also to avoid unnecessary pain. The author introduces the needle in the hypogastric region, about the width of a hand below the umbilicus. The filling should begin while the patient is in the horizontal position. If it is well tolerated, the patient can gradually be brought into the sitting position. Should circulatory disturbances develop suddenly, the pelvis should be elevated at once. The first filling should be made on the operating table. The efficacy of the pneumoperitoneum is roentgenologically controlled during the next few days, and supplementary fillings of from 400 to 600 cc (up to 1,500 cc, depending on the size of the abdomen) are given at intervals of from two or three days to two weeks, until the collapse is complete. As a rule, the resorption of the air is more rapid in the abdominal than in the thoracic cavity. The favorable results, which the pneumoperitoneum produced in some rather desolate cases, prompted this early report, for the author realizes that the relatively small number of cases and the short period of observation do not as yet permit a definite evaluation.

Pneumoperitoneum in Pulmonary Tuberculosis—In this report Rehberg describes the histories of some of the patients in whom pneumoperitoneum was employed according to Werwath's method and discusses the various pulmonary processes in which this treatment is indicated. He employed it (1) in uncontrollable hemorrhages, whenever a pneumothorax or a greater collapse operation was impossible, and paralysis of the diaphragm alone was ineffective, (2) in tuberculous processes of the lower part of the lung, in which phrenic exeresis did not produce the desired effect, (3) in a number of cases in which pneumothorax had failed, and (4) in some cases of involvement of the upper part of the lung to intensify the effect of phrenic exeresis.

Wiener klinische Wochenschrift, Vienna

49 1013 1036 (Aug 14) 1936 Partial Index

- Development of Reproductive Cells in Human Subjects G. Politzer—p 1013
- *Cerebral Death in Chronic Pulmonary Tuberculosis in Light of Research on Serous Inflammation A. Sattler—p 1015
- *Treatment of Genuine Epilepsy with Antirabic Vaccine M. Tyndel and M. Pasternak—p 1017
- Action of Antigonadotropic Hormone of Pineal Body on Rabbits P. Engel and W. Buño—p 1018

Cerebral Death in Pulmonary Tuberculosis—Sattler states that in severe, chiefly exudative pulmonary tuberculosis with gelatinous and caseous pneumonia, he occasionally observed the sudden development of cerebral symptoms, characterized by disturbances of the consciousness, somnolence, psychic and motor unrest, pupillary symptoms, Babinski's phenomenon, pareses and so on. Stiffness of the neck and Kernig's phenomenon were usually absent. Headaches were rarely complained of. The patients usually died in less than six or seven days. The terminal stage was characterized by respiratory paralysis. Spinal puncture usually revealed increased pressure of the cerebrospinal fluid. Among six patients, whose clinical histories are described, there were two in whom the cultural examination of the spinal fluid revealed the presence of tubercle bacilli, whereas in the four others the results were negative. The necropsy revealed in all cases a cerebral edema but no

signs of a tuberculous meningitis. The author thinks that from the pathogenic point of view the cerebral edema represented a "serous inflammation" (in Eppinger's meaning of that term) of toxic origin. He suggests that the fact that tubercle bacilli are occasionally detected in the cerebrospinal fluid of such cases corroborates the true inflammatory character of the disorder, and he plans histologic studies (in analogy to Eppinger's studies on other organs) in order to find evidence for the vascular disturbance that is believed to be the pathogenic basis of such changes.

Treatment of Epilepsy with Antirabic Vaccine.—Tyndel and Pasternak point out that attempts have been made in recent years to use antirabic vaccine in the treatment of certain diseases of the nervous system, such as dementia paralytica, tabes dorsalis and epilepsy. They decided to try it in patients with genuine epilepsy, selecting ten patients varying in age between 21 and 43 years. The vaccine is prepared by inoculating rabbits with an emulsion of fixed virus, killing them after seven days and then preparing an extract of their brains and spinal cords. The epileptic patients were given daily, for sixteen days, subcutaneous injections of 8 cc. of the vaccine. On the whole, the treatment was quite well tolerated, but it had no effect on the epilepsy. In view of the failure of the antirabic vaccine treatment in ten epileptic patients, the authors reject this mode of treatment.

Vestnik Khirurgii, Leningrad

42 1284 (Nos 117-118) 1936 Partial Index

Ligation of Vessels in Continuity in Grave Gastroduodenal Hemorrhages. M. G. Kamenchik.—p. 91

Immediate and Late Results of Cholecystectomy Without Drainage. D. P. Kuznetskiy.—p. 155

Internal Drainage in Treatment of Pancreatic Cyst. M. V. Krasnoselskiy.—p. 163

Symptoms, Pathology and Surgical Treatment of Malarial Splenomegaly. M. B. Topchibashev.—p. 173

*Recurrence of Nephrolithiasis. P. D. Sokolov.—p. 191

Characteristics of Study of Nerve Supply of Extremities. V. N. Shevkunenko and A. N. Maksimenkov.—p. 200

Control of Grave Gastroduodenal Hemorrhages.—In order to demonstrate the effectiveness of Witzel's method of ligation of arteries in continuity for the control of grave gastroduodenal hemorrhages, Kamenchik performed ligations in forty-two cadavers and studied the effect in roentgenograms taken after filling the gastric and the duodenal vessels with contrast material. He found that in order to prevent the contrast material from entering the ligated segment it was necessary to make multiple ligations not only of the main arterial trunk but of its branches as well. This method, first proposed by Witzel, is indicated in life-threatening hemorrhages caused by ulcers of the lesser curvature which did not penetrate into the substance of the pancreas. The vessels to be ligated are the left and the right gastric arteries and their anterior and posterior branches. Ligation of the gastroduodenal, the right gastro-epiploic and the superior pancreaticoduodenal arteries is suggested for the control of hemorrhage caused by duodenal ulceration. In those cases in which the ligation of the pancreaticoduodenal artery is not possible because of dense adhesions between the duodenum and the pancreas, a duodenotomy with suture of the ulcer is preferable. Of twelve patients with grave hemorrhages treated by this method, four died. The cause of death was not due to persistent bleeding in three, while in one case it was the result of failure to ligate the gastroduodenal artery. The success of the method depends on the timely intervention and completeness of the operation.

Recurrence of Nephrolithiasis.—According to Sokolov the so called kidney stone diathesis, resulting from a disturbance of the albumin or the water-salt metabolism, is responsible for the unpreventable recurrence of renal stones in a number of patients. Bilateral nephrolithiasis according to various authors occurs in from 14 to 15 per cent. In the author's material of 458 instances of stones in the kidney and the ureter there was an incidence of 8.58 per cent of bilateral occurrence. He estimates that about 25 per cent are not true recurrences but cases in which small stones or fragments of stone were overlooked during the operation. The operative intervention in itself with the consequent trauma to the kidney and the pelvis, the stasis and infection of the urine, constitute favorable conditions for the new formation of stones. Disturbance of the calcium-phosphorus metabolism on the basis of

hyperparathyroidism has lately been considered a factor in the primary formation of kidney stones as well as in their recurrence. Among the important prophylactic measures the author stresses a delicate careful technic in the removal of stones excluding the possibility of overlooking bone spicules, careful roentgenologic revision of the kidney on the operating table, effective measures against urinary stasis and infection and the proper diet. Even more important is the study of individual factors in each case.

Hygiea, Stockholm

98: 465-496 (July 31) 1936

*Contribution to Knowledge of Spastic Ileus. K. Boman.—p. 46

Rhinolithiasis. A. Bergstrand.—p. 475

Additional Case of Choleic Acid Enterolith. J. Hellstrom.—p. 480

Thrombosis and Jaundice. Gosta Hultqvist.—p. 483

Spastic Ileus.—In Boman's patient, a man aged 23, with a wound infection in one foot but no gastric disorder and in good general condition, a disturbance with a picture of high ileus set in and resisted conservative treatment. On operation, the upper loop of the jejunum showed a sharp transition between a proximal dilated, reddened intestinal portion including duodenum and stomach, and a distal pale and collapsed portion. At the place of transition a round anemic edematous efflorescence appeared, followed by a contraction ring, which obstructed the lumen. On palpation this disappeared, to be followed by another spasm in the same manner. The spasm is ascribed to a circulatory disturbance, and the circulatory disturbance in the intestine is regarded as a partial phenomenon of a general circulatory disorder expressed by the shocklike condition of the patient at the onset. This disturbance is attributed to intoxication from the wound with its breaking down products. A doubly fenestrated soft catheter was introduced in the stomach for drainage. Attempts to improve the circulation by administration of fluids and other means, and use of spasmolytics and other preparations to restore intestinal tonus through the vegetative system were without effect. On the sixteenth day the patient died in a new attack with collapse, falling temperature, pain and hiccups, together with marked aggravation of the general condition, small pulse and tachycardia. Necropsy failed to reveal any mechanical cause of the ileus or other positive results.

Norsk Magasin for Lægevidenskapen, Oslo

97: 785-896 (Aug.) 1936

Titration of Sexual Hormone Preparations and Their Practical Value.

Review Based on 110 Titrations. L. Gram.—p. 785

Papillomas of Renal Pelvis. G. Ulland.—p. 820

Fatal Outcome of Pyelography? G. Ulland.—p. 827

*Gee-Herter's Disease. New Casuistic Contribution from Medical Division A of Rikshospital. O. K. Evensen.—p. 830

Fatal Outcome of Pyelography?—In his report of a case of bilateral dilatation of the renal pelvis and the ureters due to cancer of the seminal vesicles with stricture of the ureter orifices, in which urography with neo iopax was followed by uremic symptoms and which proved fatal on the fourth day, Ulland stresses the need of caution in the use of urography in bilateral renal disturbances, especially if there are signs of insufficiency.

Gee-Herter's Disease.—Evensen reports the case of a man aged 22 with a history of increasingly frequent periods of abundant porridge-like light stools since the age of 12 who was admitted to the medical division A of the Rikshospital for carpal spasm. His twin sister was treated for Gee-Herter's disease in the same division seven years earlier. The patient was mentally and physically somewhat infantile with a large abdomen, reduced liver dullness, rigidity and hypertony of musculature. Roentgen examination showed a large dilated colon, open sutures in the cranium, deficient epiphyseal lines of the extremities and large and coarse spongiosa network everywhere. After the administration of 50 Gm. of dextrose, the blood sugar curve showed the characteristic low increase. Hypochromic anemia responded fairly well to treatment with iron. During treatment with calcium preparations and cod liver oil the blood calcium rose from 6.4 mg. per hundred cubic centimeters in April 1934, to 9.45 mg. per hundred cubic centimeters in August 1934. The blood phosphorus remained within normal limits. The patient's weight was increased 6 kg. and his height 1.5 cm.

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ANTHRACOSILICOSIS

WALDEMAR C DREESSEN, MD

AND

R. R. JONES, MD

Passed Assistant Surgeons U S Public Health Service
WASHINGTON, D C

Most cases of silicosis are the result of inhaling dust that is not pure silica. An example is the disease caused by dust generated in the mining and processing of hard coal in Pennsylvania. The disease produced by this dust is termed anthracosilicosis and answers all the definition requirements of an occupational disease. Locally it is called "miners' asthma." It must, however, be differentiated from the pathologic state anthracosis common among most city dwellers.

Our remarks are based on a recent medical, engineering and statistical study¹ by the Public Health Service of (a) practically all the personnel of three representative mines, numbering 2,711, (b) 135 apparently tuberculous-free, disabled former anthracite workers who were studied intensively in hospitals, and (c) limited observations on the disease as observed in a tuberculosis sanatorium of Pennsylvania. It is our intention to outline briefly certain aspects of medical interest in anthracosilicosis.

Approximately 150,000² men were engaged in the anthracite industry of Pennsylvania in 1930, but various economic changes³ in the past fifteen years have caused a rather wide dissemination of anthracite workers throughout the country. Definite cases of this migration have come to our attention. Their significance as related to differential diagnosis in other sections of the United States is obvious.

ETIOLOGY

Etiologic factors pertaining to the pneumoconioses in general are well known to those practicing industrial medicine. We shall merely touch on certain dust factors of special importance in anthracosilicosis. Our studies showed that the hazard varied in different operations, according to the dust concentration and its free silica content. Therefore, in order to have a proper appreciation of the pathogenesis of this pneumoconiosis, it is necessary to know variations of this factor.

From the Office of Industrial Hygiene and Sanitation U S Public Health Service.

Owing to lack of space this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

¹ Anthracosilicosis Among Hard Coal Miners. Bull. 221 U S P H S, Washington, D C, 1936.

² U S Bureau of Census.

³ Lubin, I. The Absorption of the Unemployed by American Industry. Washington, D C, Brookings Institute, July 1, 1929, vol. 1, U S Census 1920 and 1930.

The median size of the dust particles that the anthracite worker is likely to inhale is about 0.91 micron, or about the size of a pathogenic micrococcus.

As regards the free silica content of the dust, the workers were arrayed chiefly into three groups:

1. Regular miners exposed to dust with a free silica content of from 3 to 4 per cent.

2. Workers in the haulage ways, exposed to dust with a free silica content of 13 per cent.

3. Rock tunnelers and muckers exposed to 35 per cent free silica.

These figures are characteristic exposures but are not all inclusive because they do not take care of mixed exposures and of a number of other factors. For example, the summary table of exposures (table 1) shows that about 43 per cent of the workers are employed as miners yet on statistical analysis some of these men had higher siliceous exposures than 4 per cent, thus bringing the proportion of miners exposed to a dust of low silica content down to 16 per cent.

Not all workers in a dusty trade are necessarily exposed to a dust hazard. For instance, 361 of the 2,711 active anthracite workers were exposed to less than 5,000,000 particles of dust per cubic foot of air and were used as controls in analysis of the data. As a concrete example of just how much dust the concentration of 5,000,000 represents, it has been found that municipal street cleaners are exposed to about this degree of dustiness. Nor has the Public Health Service in its various studies of workers in dusty trades⁴ found significant pulmonary fibrosis in any trade in which the exposure was less than 5,000,000 particles of dust (less than 10 microns) per cubic foot of air. Furthermore, the engineering phase of the anthracite study revealed that various methods of dealing with the dust problem have been introduced into the industry. As an example, the dry breaker (building in which anthracite coal is graded for market) is almost passe. The etiologic factors just touched on emphasize the importance of an occupational history.

For the individual case a typical example of the method used to determine the patient's dust exposure is shown in table 2. The last occupation listed is his present job. The weighted average dust exposure in each job is multiplied by the number of years in that occupation. The sum of all these products, divided by years in the industry, gives a fairly accurate estimate of the man's average exposure.

COMPOSITION OF ANTHRACOSILICOTIC LUNGS

Thirty years ago Wainwright and Nichols⁵ reported that, by analytic means then available, 33 per cent of the dried lungs of anthracite coal miners was foreign matter. In unexposed adults this percentage was only

⁴ Public Health Bull. 208. The Health of Workers in Dusty Trades: general statement and summary of conclusions.

⁵ Wainwright, J. M., and Nichols, H. J. Anthracosis and Tuberculosis. Am. J. M. Sc. 130: 403 (Sept.) 1905.

1 to 3 King, McNally⁸ and Boehme⁹ report 0.14, 0.113 and 0.12 as the percentage of silica normally present in lungs. The total silica found in the lungs of anthracite workers in our study was between 1.20 and 1.86 per cent. These values approximate those found by others (table 3) examining lungs of workers who had been exposed to dust of hard coals.

TABLE 1—Summary of Occupational Dust Exposure of Workers in Three Representative Anthracite Coal Mines

Section and Occupation	Number of Men Exposed at Time of Survey	Number of Samples (Weighted Average)*	Dust Count Millions of Particles per Cubic Foot of Air (Weighted Average)*
Underground Workers			
Cutting and loading			
Contract miners and laborers	1,219	114	480
Chamber mining	63		203
Breast (pitch)	204		88
Breast (scraper)	302		50
Breast (shaker)			201
Company miners	130		26
Chute loaders and starters	4	12	3.6
Shaker loaders	7	4	3.2
Scraper loaders	12	4	
Scraper loaders engineer	31	1	
Opening work (dry process)			
Rock drillers	9	17	241
Rock loaders (muckers and slatemen)	35	2	531
Transportation			
Motormen and others			
Mine 1	166	8	71
Mine 2	44	8	233
Mine 3	69	13	3.1
Loader and driver bosses			
Slatemen and helpers	10	1	0.9
Shaft slope and plane workers			
ers spraggers and couplers	91		
Mine 1		7	2.0
Mines 2 and 3		2	3.1
Other inside workers			
Ventilation timbering and holisting water section	276	1	6.9
Superintendents	30	1	2.9
Workers Above Ground			
Preparation (breaker)			
Dumpers and plane tenders			
Dry breaker	2	2	71
Wet breakers	7	7	14
Platform men and chippers			
Dry breaker	7	2	69
Wet breakers	23	7	24
Jig tenders and cone attendants	15	6	11
Slate pickers			
Dry breaker	40	21	380
Wet breakers	17	5	8.9
Car loaders and others			
Dry breaker	8	2	22
Wet breakers	20	4	2.3
Other workers			
Dry breaker	13	1	331
Wet breaker	49	2	3.0
All other workers above ground	336	34	2.9
Totals	2,833	283	

* With Impinger U. S. Public Health Service method.

† Dust exposure depends on type of work performed as given in detailed occupational history.

‡ Dust count obtained from samples used for other occupations of similar exposure.

§ Average includes other samples.

It is interesting to note in this connection that the majority of compensation awards for silicosis among coal miners in Great Britain¹⁰ go to workers in the anthracite fields of South Wales. In Australia Badham and Taylor¹¹ report that it is the coal of low hydrocarbon content which produces the most fibrosis. Most important and of more than passing interest is the fact that in those regions of the world where the coal approaches the consistency of Pennsylvania anthracite

namely Wales¹² and Australia,¹¹ the advanced pulmonary fibrosis encountered on autopsy closely resembles that observed in the Pennsylvania anthracite miner.

PATHOLOGY

On gross appearance anthracosilicotic lungs are a dark gray, firm on palpation and usually heavy. In early cases a fine, black linear net work is noted on the surface of the lungs. The pleura is involved to a degree corresponding somewhat to the amount of parenchymatous involvement. Usually, fusing of the interlobar pleurae and scattered tough fibrous adhesions are noted between the visceral and the parietal pleura. Varying degrees of emphysema are noted. On section linear black markings and stellate, black fibrous nodules are noted throughout the lungs.

In more advanced cases considerable distortion in the lobes may be noted. There is more pleural involvement, and emphysematous blebs, often of large size, are present. The disseminated nodules tend to coalesce. The coalesced nodules on becoming confluent finally show up as large, black to gray areas of consolidation which replace large areas of functioning lung (fig. 1) and tend to be predominantly subapical in location. These consolidations have been described by Cummins and Sladden¹² as cuirass-like sheaths and are usually as hard as a golf ball. The cut surfaces of these consolidated masses are blackened by the heavy impregnation of carbon (fig. 2). Occasional strands and whorls of gray connective tissue may be seen in the cuirass. Not infrequently a central area of black, pasty, noncaseous necrosis, often with cavitation, is present. The lung tissue between the black masses in these advanced

TABLE 2—Method of Computing the Average Dust Exposure of Each Employee

Employee's Occupation	Number of Years in Occupation	Average Dust Concentration Millions of Particles per Cubic Foot of Air	Millions of Particles per Year per Cubic Foot
Slate picker (dry breaker)	2	380	760
Patcher (dry mine)	2	71	142
Mule driver (dry mine)	3	71	213
Miners laborer (chamber)	3	490	1,470
Miner (chamber mining)	15	490	7,350
Section foreman	5	7	35
Totals	30		9,700

$$\frac{9,700 \text{ (millions of particle years per cu. ft.)}}{30 \text{ (number of years)}} = 323 \text{ millions of particles per cubic foot}$$

TABLE 3—Total Silica and Ash Determinations on Lung Specimens from Coal Miners in Three Different Countries¹

Investigator	Coal Field	Percentage			
		Total Silica		Ash	
		Min. num.	Max. num.	Min. num.	Max. num.
U. S. Public Health Service ¹	Pennsylvania anthracite	1.20	1.80	5.0	10.0
Badham ¹¹	New South Wales	0.22	1.7	2.5	6.5
Cummins ¹²	South Wales	0.42	4.25	4.49	12.1

cases may be congested edematous or emphysematous. The bronchial walls are thickened and may show cylindrical dilatation.¹³

Grossly then the anthracosilicotic lung is characterized pathologically by silicotic fibrosis, a deposition of

⁷ King E. J., Stanial H. and Dolan M. Biochemistry of Silica. Acid Presence of Silica in Tissues. Biochem. J. 27: 1002-1006, 1933.

⁸ McNally W. O. Silica Dioxide Content of Lungs in Health and Disease. J. A. M. A. 101: 584-587 (Aug. 19) 1933.

⁹ Boehme A. Klin. Wchnschr. G. 1909 (Oct. 14) 1924.

¹⁰ Heffernan Patrick. Industrialism and Tuberculosis. Tubercle 17: 250 (March) 1916.

¹¹ Badham C. and Taylor H. B. Coal Miners Lung. M. J. Australia 1: 511-524 (April 29) 1933.

¹² Cummins S. L. and Sladden A. F. Coal Miners Lung. A. Investigation into the Anthracotic Lungs of Coal Miners in South Wales. J. Path. & Bact. 33: 1095 (Oct.) 1930.

¹³ Norris G. W. and Landis H. R. M. Diseases of the Chest. The Principles of Physical Diagnosis. Philadelphia W. B. Saunders Company 1924.

carbonaceous material, frequently in curass-like masses in the infraclavicular regions of the lungs, a proportionate degree of pleural reaction, compensatory emphysema and chronic bronchitis or bronchiectasis.

Microscopically, black particles are present in the macrophages but they are rarely seen free in the alveolar epithelial cells. Collections of "dust cells" are seen, however, in the perivascular and peribronchial

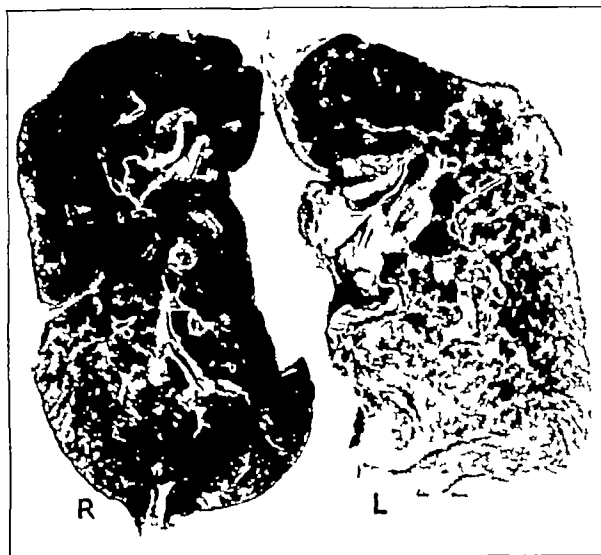


Fig 1—Anthracosilicotic lungs of a miner aged 41 who had worked six years as a laborer at the face and fourteen years as a miner in a dry anthracite mine. Note the disseminated nodules identified by pigmentation and beginning to coalesce in the upper lobes of each lung.

lymphatics and adjacent interstitial tissue. Fibrous hyperplasia is observed quite early along the lymph channels and increases in certain areas to the formation of nodules. In the center of the smaller nodules, evidence of devascularization may be seen. The centers of larger nodules are for the most part well formed, white, fibrous connective tissue and commonly reveal evidence of hyaline degeneration but are often free of appreciable amounts of carbon. In the periphery of the nodules, dust-laden macrophages are present. Free extracellular dust is noted in large quantities in the adjacent underlying dense connective tissue (figs 4 and 5).

As confluence of the nodules occurs, the peripheral coal dust deposits are enclosed in the larger nodule formed. Areas of central, amorphous, finely granular necrosis are often seen. Fibrous hyperplasia and dense depositions of coal dust are seen in the peritracheal and pulmonary lymph glands, often to such an extent that histology of the organ is completely obscured.

ROENTGENOLOGY

In the scheme of x-ray interpretations shown in figure 6 the progressive changes might be regarded as portraying the pathogenesis of the disease. In this scheme we have drawn freely from existing classifications of silicosis. The influence of Pancoast and Pendergrass,¹⁴ Sampson¹⁵ and the South African workers¹⁶ is quite apparent. Pancoast and Pendergrass¹⁴ in their studies of the pneumoconioses have

shown that a close correlation exists between the x-ray examinations and the underlying pathologic changes.

Individuals who have had little or no exposure will show changes indicated as the linear phase in figure 6, and a summation of the changes would be interpreted as "usual fibrosis."

The increasing linear shadows are indicated by commencing generalized fibrosis representing, pathologically, fibrosis and engorgement. Fibrous hyperplasia is beginning in tracheobronchial lymph nodes, along the lymph channels and in the adjacent interstitial tissue. A case showing this appearance in the x-ray examination is a borderline case. The important characteristic of the x-ray picture is that it is still linear. Should removal from the dust exposure be effected, recession in the prominence of the pulmonic markings might be expected (fig 7).

The next phase is exemplified by the x-ray film with a "ground glass appearance" and shown in figure 6 as the granular phase. Early in this phase a diminution in the prominence of the linear markings is noted, and later these markings are almost completely obliterated. It may be that pathologically the lymphatics are no longer engorged but are undergoing fibrosis with more and more dust finding its way into the interstitial tissue of the lungs and being retained.

About the time obliteration of the linear markings becomes definitely apparent in the granular phase, an early degree of nodulation will usually be present.



Fig 2—Anthracosilicotic left lung. Note large indurated fibrous mass blackened by carbon which has practically replaced all the functioning tissue of the whole upper lobe. Central portion of the mass shows noncaseous necrosis and early cavitation. Note smaller firm mass in upper portion of the lower lobe and numerous scattered nodular and diffuse pigmented fibrous masses interspersed with emphysematous lung tissue throughout remainder of lung. Walls of bronchi and blood vessels thickened. Few scattered fibrous tags over pleura.

When nodulation becomes the predominant feature, the nodular phase has been reached. The nodules in this phase do not exceed 6 mm in diameter¹⁷ and

14 Pancoast H K. and Pendergrass E P. Review of Pneumoconiosis. Further Roentgenological and Pathological Studies. *Am J Roentgenol* 26 556 (Oct.) 1931.

15 Sampson, H L. Personal communication to the author.

16 "Silicosis. Records of the International Conference held at Johannesburg Aug 13 27 1930. International Labor Office Geneva.

17 Roentgenological Appearances in Silicosis and the Underlying Pathological Lesions. report of a committee composed of Drs H K Pancoast, E P Pendergrass, A R Riddell and others. *Pub Health Rep* 50: 989 (Aug 2) 1935.

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measure for the most part from 3 to 4 mm. There is some variation in the size of nodules encountered in x-ray films of this group but in any one individual the nodules are fairly uniform in size unless infection is present. In this phase the hilar shadows are more dense than usual but not appreciably larger than those noted in the foregoing granular phase. In fact, in

tion of the costophrenic angles are frequently noted and in extreme cases lead to almost complete fixation of the diaphragm.

CLINICAL MANIFESTATIONS

The latent period of the disease, with the exception of rock workers, is approximately fifteen years, as less than 2 per cent of the workers developed the disease in this period of time.

It has already been stated that 2,711 active workers were examined. Of this number 616, or 22.7 per cent were diagnosed as having anthracosilicosis. Examining almost all employees at the representative mine afforded us a sizable group of control individuals who were essentially of the same age, race and economic status. In the accompanying tables the examinations of the anthracosilicotic patients are compared with the controls and a group of 135 disabled ex-workers who were later examined. The large group of active workers (2,095) essentially negative for anthracosilicosis showed changes of about the same order as the controls.

Symptoms—Apparently, the pathologic changes tend toward the production of rigid lungs. Clinically, therefore, the symptomatology is not unlike fibroid phthisis or, as Wainwright and Nichols⁶ stated, essentially a chronic bronchitis and emphysema. The cardinal symptom is dyspnea and is of a type that is singularly lacking in the orthopneic phenomenon. Like patients with fibroid tuberculosis, the individuals with well established anthracosilicosis are frequently

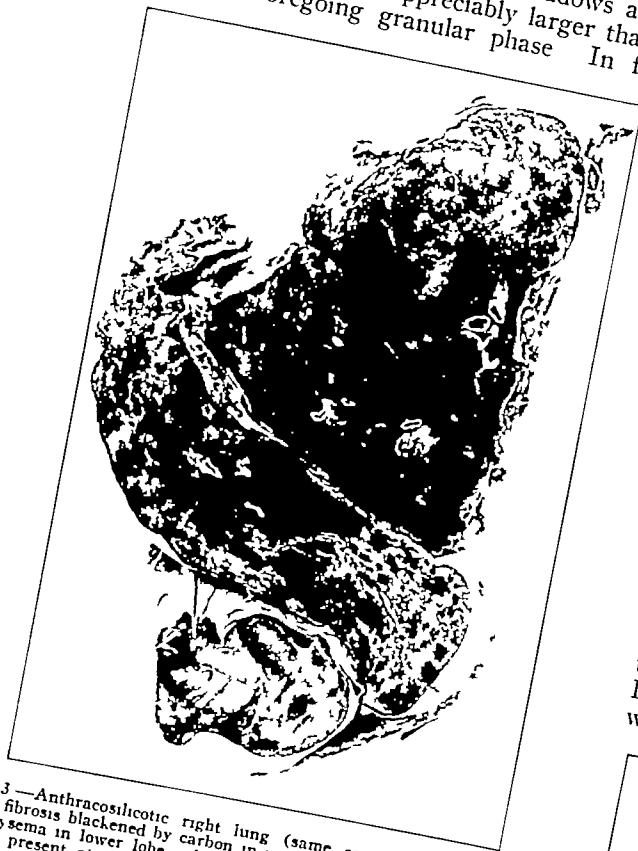


Fig 3—Anthracosilicotic right lung (same case as figure 2). Note massive fibrosis blackened by carbon in upper lobes and the extreme degree of emphysema in lower lobe. An area of moderately emphysematous lung tissue is present at the apex.

certain cases one gains the impression that the hilus is smaller. Where the hilar shadows are larger or a gross disparity in their sizes on the two sides is noted, infection is suggested. In this phase vicarious emphysema becomes quite readily discernible.

The next phase is the conglomerate. In this phase definite coalescence of the nodules has occurred. We have already noted how, pathologically this coalescence and confluence of nodules advance until all or the greater part of the upper lobes have been replaced by large masses of fibroid tissue containing entrapped coal dust. In such cases the basal portions of the lung show marked emphysematous changes often manifest to a degree as large blebs or bullae (fig 3).

An overlapping in the phases of pathogenesis has been shown because in the final interpretation of the film such features as fixation of the diaphragm, mediastinal distortion, childhood tuberculous lesions (Ghon's) early infraclavicular infiltrates and also certain clinical data must be considered. Some of this information, of course, is obtainable only by fluoroscopy.

The first signs of importance noted on fluoroscopy is a limitation (table 5) in diaphragmatic excursion due presumably to loss of elasticity in the lungs and not necessarily to pleural reaction. Later, concomitant with the changes occurring in the lung parenchyma the pleura shows proportionate involvement. Thus diaphragmatic deformities such as peaking and obliteration

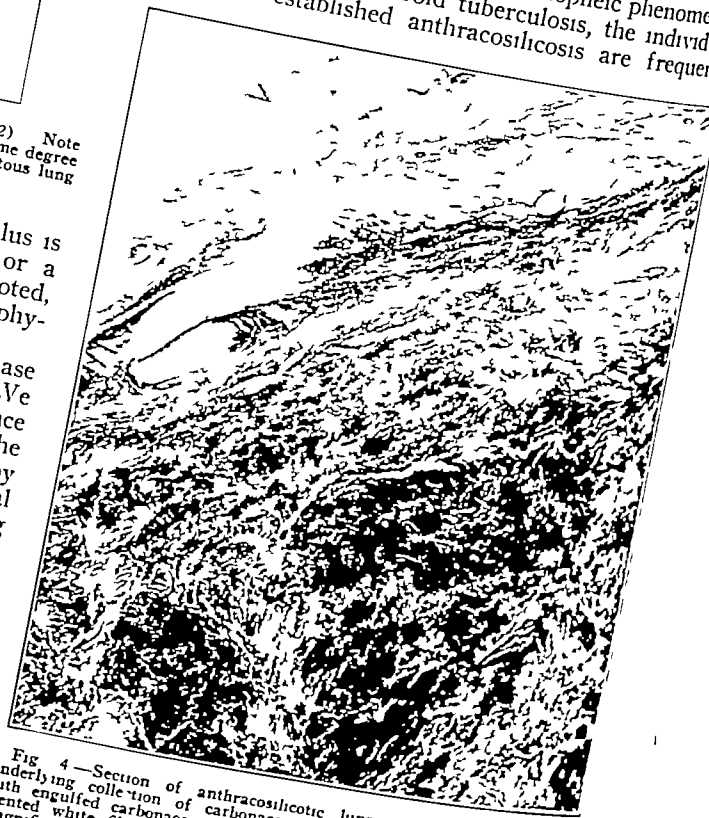


Fig 4—Section of anthracosilicotic lung. Note thickened pleura underlying collection of carbonaceous material, massive diffuse fibrosis with engulfed carbonaceous material and interlacing strands of nonpigmented white fibrous tissue. Reduced from a photomicrograph with a magnification of 16 diameters.

not sick enough to be bedridden nor are they well enough to engage in activities requiring more than slight exertion. Cough is a frequent symptom and is usually productive of black viscid sputum. The bronchial pathologic condition probably explains this symp-

tom Chest pain is common and is usually manifest as a substernal sense of restriction or a pleuritic pain in the lateral bases. Not infrequently the pain is aggravated by the cough, and this occurrence is readily appreciated when diaphragmatic fixation, mediastinal distortion and pleural reactions are considered. Weakness is a comparatively late symptom. Among the

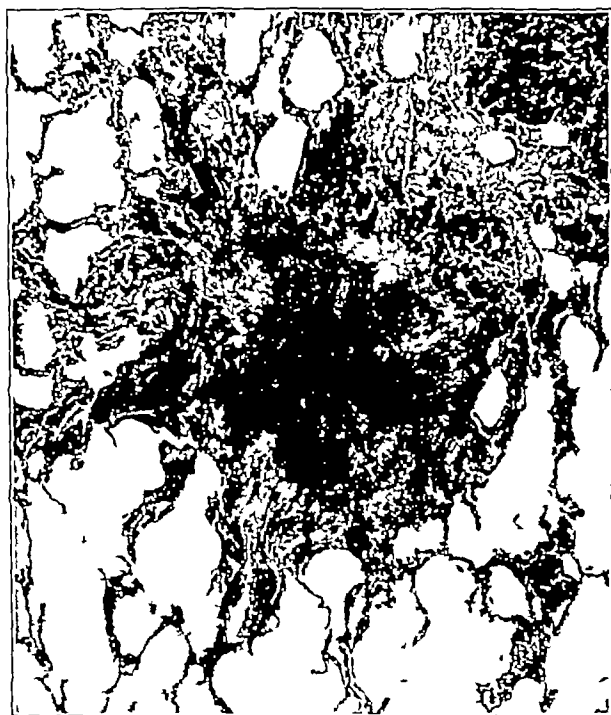


Fig 5—Small fibrous nodule showing entrapped coal dust. Reduced from a photomicrograph with a magnification of 80 diameters.

active workers it was offered as a complaint in 5 per cent of the early cases and in 14 per cent of the advanced cases. Hemoptysis may occur in the form of blood-streaked sputum as a result of an alveolar rup-

TABLE 4—Percentage Showing Various Symptoms by Diagnostic Group

Symptom	Disabled Former Anthracite Worker	Active Workers with Anthracosis		Control
		Advanced	Early	
Dyspnea	95.0	68.0	84.1	6.4
Cough	92.0	97.7	10.7	2.2
Weakness	82.0	14.1	4.7	0.8
Chest pain	36.0	17.0	5.9	1.7
Gastric distention	62.0	*	*	*
Hemoptysis	30.4	*	*	*
Night sweats	8.0	*	*	*
Number of men	135	106	510	361

* No comparable data

ture, but its occurrence at any time is suggestive of tuberculosis. Night sweats and loss of weight also suggest complicating infection.

The foregoing symptoms occurred at roughly twice the frequency among the complicated cases as in the cases not complicated by infection.

Signs—The clinical signs vary with the pathologic changes. About the time the anthracosilicotic patient is beginning to show a break in his respiratory compensation his general appearance is quite indicative of his physical status. There is a definite loss in the tonicity of the musculature of the upper arm, shoulder, neck

and chest with the exception of those muscles actively engaged in the accessory respiratory function. Loss of weight is quite marked, the skin is frequently of a dusky pallor and the face has a weather-beaten appearance. This general appearance has been referred to as asthenic or cachectic (table 5). It was observed in 30 per cent of those in an advanced stage of the disease, in 97 per cent of the disabled, but in only 4 per cent of the controls.

Dyspnea as objectively observed is even more reliable and frequent than as subjectively noted. In early cases it often required the functional exercise test¹⁸ to make it objectively discernible. The pulse and respiratory rate was taken at rest, immediately after and two minutes after the exercise. Obviously the response to this exercise is influenced by such factors as weight, age, cardiac condition, general physical condition and metabolism.

Another characteristic of the dyspnea is the prolongation of expiration. Its infrequency among controls indicates its importance in differential diagnosis. Because of the increased rigidity of the lungs and the accessory respiratory apparatus, the individual cannot empty his lungs rapidly enough to allow for great increase in respiratory rate. In the functional test the rate will usually be found elevated after the two minute rest period. Not infrequently this sign may be noted in well established cases merely by careful observation during the course of the medical examination.

Decreased chest expansion is a common sign, but a marked decrease is rarely encountered until the condition has progressed to a stage showing disability. The percussion note shows early bilateral impairment, later with consolidated and emphysematous areas in the lung it is respectively dull and hyperresonant. Fremitus is analogously altered. The breath sounds in early cases are bilaterally decreased, but with the formation of consolidations the breath sounds can be of

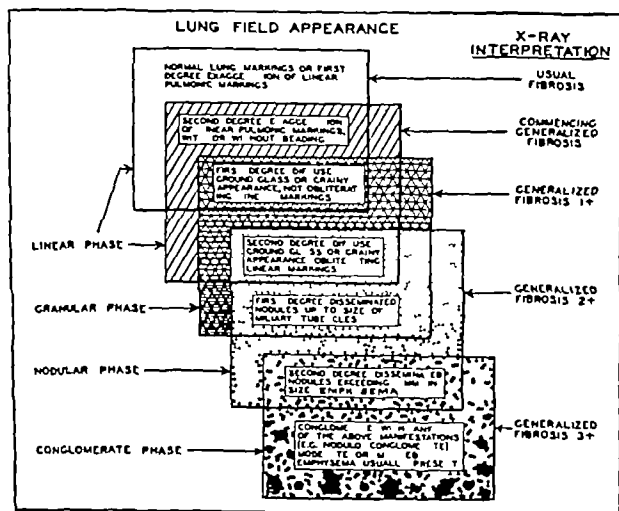


Fig 6—Scheme of x ray interpretations. Asymmetrical distribution of shadows, unilateral increase of markings and less discrete or coalescing shadows (mottling) imply complicating pulmonary infection and modify any of the phases illustrated.

almost any character depending on the location and type of the underlying pathologic condition. Râles and rhonchi are common adventitious sounds in anthra-

¹⁸ Except when contraindicated the test used was as follows: The individual places one foot on a chair or firm stand 18 inches in height and raises his body to the erect position twenty five times in thirty seconds.

cosilicosis Not infrequently they may be encountered in cases apparently not complicated by infection. They are usually located in the interscapular areas or the lateral bases below the upper third of the chest.

About one third of the affected individuals showed curved nails or early evidence of clubbing, which may be related to long standing fibrosis and bronchiectatic and emphysematous changes.

Cardiac enlargement and other cardiovascular defects were not observed to the extent that might have been expected. The higher prevalence in the disabled group suggests that it is a late complication.



Fig 7—A miner aged 40 had been engaged in the following occupations: butcher's apprentice and butcher four years, lumberjack in the winter and laborer in paper mill in the summer four years, press mill operator in copper mill one year, outside laborer at anthracite mine one year, miner's laborer one year, contract miner eleven years. The estimated weighted average dust exposure was 192 million particles per cubic foot. There were no complaints. The respiratory rate remained elevated after the exercise test. Note the bilateral coarse granular appearance of the lung fields with beginning nodular shadows. The linear markings are almost obliterated.

INFECTION AS A COMPLICATION

As in other forms of silicosis, tuberculosis is generally the complication that causes the most concern. Surveys indicate that the tuberculosis prevalence in the general population is from 1 to 2.5 per cent. With approximately the same diagnostic basis, the prevalence noted among the whole group of 2,711 active workers was 6 per cent.

On analysis this excess was found to be confined to those affected with anthracosilicosis because less than 1 per cent of the controls and about 2 per cent of all

history of tuberculosis contact did not explain the higher frequency among those with anthracosilicosis.

When both tuberculous and nontuberculous infections were considered, it was found that 23.9 per cent of all active workers were affected. Such infections complicated 58 per cent of the early cases and 92 per cent of the late cases of anthracosilicosis.

In the 135 disabled, apparently tuberculous free ex-workers so studied, all symptoms and signs were more universally present (table 4). Gastric distress was strikingly prominent in this group. About one third gave a history of hemoptysis. Only twelve (8.8 per cent) had fever, which ranged from 99.2 to 102.5 F. Night sweats were observed in only 8 per cent, yet thirteen (about 10 per cent) were shown to have positive sputums. These sputums contained acid-fast bacilli which produced lesions of tuberculosis when injected into guinea-pigs. Although hemoptysis was recorded in 30 per cent, only five of those with positive sputum gave a history of spitting blood.

In comparing the clinical course of tuberculosis in cases with pneumoconiosis and those without pneumoconiosis, it was learned that in the pneumoconiotic shortness of breath is always an initial symptom, whereas in tuberculosis uncomplicated by pathologic conditions caused by dust it is a late secondary symptom. The pneumoconiotic cases showed less tendency toward cavity formation. Cough, chest pain and weight loss occur later in pneumoconiotic patients.

Thus it would seem that the relatively low febrile reaction, the proliferative rather than the exudative type of tuberculosis, the marked dyspnea and the gastric distress point to chronicity. Moreover, these observations on tuberculous infection among the disabled ex-workers closely parallel those of Williams¹⁹ on old and retired Welsh coal miners.

DISABILITY

On the basis of all clinical data in each case, the active workers (2,711) were classified according to disability as follows: none, slight, moderate or marked.

Irrespective of the degree, about 63 per cent with anthracosilicosis showed evidence of disability, as compared with 9.7 per cent of the control group. This excess of disability might be assumed as attributable to the direct or indirect effects of dust. If slight disability for which the worker is able to compensate is disregarded, it was found that moderate and marked degrees handicapped 20.9 per cent of those with anthracosilicosis and only 1.7 per cent of the controls.



Fig 8—A miner aged 52 had been a contract laborer seven years and a contract miner twenty-six years (fourteen years in the gangway work and nineteen years at the breast). He had been a farmer before entering the mines. The estimated weighted average dust exposure was 323 million particles per cubic foot. Definite symptoms and signs were present. Note the symmetrical nodular shadows beginning to coalesce and emphysema.

TABLE 5—Percentage of Disabled Former Anthracite Workers, and of Employed Workers in the Industry Having Specified Physical Impairments as Compared with the Control Group

Physical Changes	Anthracosilicotic Patients			
	Former Anthracite Workers	Disabled Employed Workers in Advanced Stage	Employed Workers in Early Stage	Control Group
Dyspnea (after functional exercise test)	100.0*	77.4	41.2	1.6
Asthenic or cachectic general appearance	87.0	30.2	11.6	4.0
Asthenic or emphysematous chest	74.8	52.0	25.0	8.7
Chest expansion (average in inches)	1.8	2.3	2.7	3.1
Impaired resonance	92.7	57.0	69.0	8.3
Changed breath sounds	95.0	92.0	85.0	26.5
Altered fremitus	87.0	92.0	85.0	7.0
Persistent rales				
Crepitant	25.0	16.0	7.1	0.3
Subcrepitant	51.8	32.0	19.4	3.3
Sibilant	36.8	33.0	16.6	1.4
Sonorous	7.0	15.0	5.8	1.4
Prolonged expiration	100.0	45.2	29.7	0.8
Emphysema†	24.0	8.5	6.1	3.3
Enlarged heart	76.†	20.2	23.0	4.1
Clubbed or curved nails‡	40.0	16.0	5.0	5.0
Cyanosis§	96.3	85.0	76.0	17.2
Impaired function of diaphragm‡				
Number of persons	135	105	510	261

* With or without exercise.

† Unable to exercise; many data not comparable.

‡ As determined by x-ray examination.

§ No comparable data.

those negative for anthracosilicosis (2,095) had clinical tuberculosis. In the case of the affected workers, on the other hand, the percentage with clinical tuberculosis complicating the anthracosilicosis was 15 in the early cases and 43 in the advanced cases. A positive

SUMMARY

1 Anthracosilicosis (miners' asthma) is an occupational disease characterized by silicotic pulmonary

fibrosis, excessive retention of carbonaceous material and emphysema. Like other forms of silicosis, it renders the sufferer susceptible to tuberculosis late in life.

2 The chief subjective symptoms found in early cases of the disease are shortness of breath, cough and pain in the chest, later weakness, gastric distress and hemoptysis occur.

3 The most common objective symptoms observed are dyspnea, prolonged expiration, decreased expansion of the chest, curving or clubbing of the fingernails, changed breath sounds, altered fremitus and impaired resonance. In more advanced cases, or in cases complicated by infection, persistent râles and such constitutional impairments as loss of weight, cardiac defects and cyanosis are often noted.



Fig. 9—A miner, aged 55, had been a mine laborer in anthracite for three years, a contract miner for twenty-three years and a company laborer for the past six years. The estimated weighted average dust exposure was 390 million particles per cubic foot. Symptoms and signs of well established anthracosilicosis were present. Note the conglomerate areas of fibrosis, emphysema and diaphragmatic deformity.

anthracite mines, 616 (22.7 per cent) were found to be affected with anthracosilicosis.

5 The prevalence of clinical pulmonary tuberculosis in those with anthracosilicosis was 15 per cent in the early cases and 43 per cent in the late, well established cases. Among the controls and those essentially negative for anthracosilicosis, the prevalence was respectively 1 and 2 per cent, or about the same as in the general population.

Office of Industrial Hygiene and Sanitation Investigations

ABSTRACT OF DISCUSSION

MR. P. W. GUMAER, West Englewood, N. J. What are your lower limits and how does it compare with the smoky city atmosphere?

DR. R. R. SAYERS, Washington, D. C. I believe that the number of particles would vary. It would be very great in the city much more than the 360,000,000 particles per cubic foot as shown to the individual that he had on his table. Then the authors explained that 361 were used as controls. These were exposed to 5,000,000 particles or less. They also stated that this was about the equivalent of very dirty places found among the street sweepers in the city.

DR. W. C. DRESSEN, Washington, D. C. In regard to smoky cities, I hardly believe we are on comparable ground. Smoke is somewhat different from industrial dust, particularly in its size distribution. In regard to the air pollution of cities, I believe the concentrations are very much lower than 5,000,000 particles of a size usually encountered in industrial plants.

DR. R. R. JONES, Washington, D. C. There are some facts indicated in this paper which I would like to emphasize: first, the length of time required to develop this disease to the point at which such pulmonary disorder is revealed as was shown in the films presented. The patients had worked for many years, and with the exception of one discussed, all were still at work. This clearly shows that since anthracosilicosis develops slowly over a period of years, a positive diagnosis of the disease does not necessarily mean disability. Dr. Riddell of Canada in a recent article stressed a peculiarity of the

dyspnea associated with silicosis which we have also found true of the dyspnea associated with anthracosilicosis. It is this. Individuals with dyspnea resulting from true asthma or circulatory disturbances are orthopneic. They must be propped up in bed to be made comfortable while the silicotic individual evidencing this symptom is not usually orthopneic—he is just as comfortable lying down as he is when sitting up. We hospitalized 135 patients with advanced anthracosilicosis, and this same peculiarity was shown by those with marked dyspnea. The only exceptions were those with cardiac complications.

DR. R. R. SAYERS, Washington, D. C. Dr. Jones stated that it takes a long time for anthracosilicosis to develop. After fifteen years of exposure, only 2 per cent had the disease in the very early stage and without disability. But after twenty-five years and longer, 90 per cent of all exposed had the disease in some stage, some with disability. Exposure to underground conditions other than the exposure to dust did not predispose to respiratory diseases, as a matter of fact, men under these conditions had less respiratory disease than the general male population of the same age groups, while those exposed to dust and working underground had a much higher rate.

INTRAPROSTATIC INJECTION

AN EXPERIMENTAL STUDY

VINCENT J. O'CONOR, M.D.

AND

ROBERT L. LADD, M.D.

CHICAGO

In 1917 Cano, Townsend and Valentine¹ suggested direct medication of the infected prostate gland by perineal injection of a methyl phenol and a normal phenol serum. The method was not widely adopted.

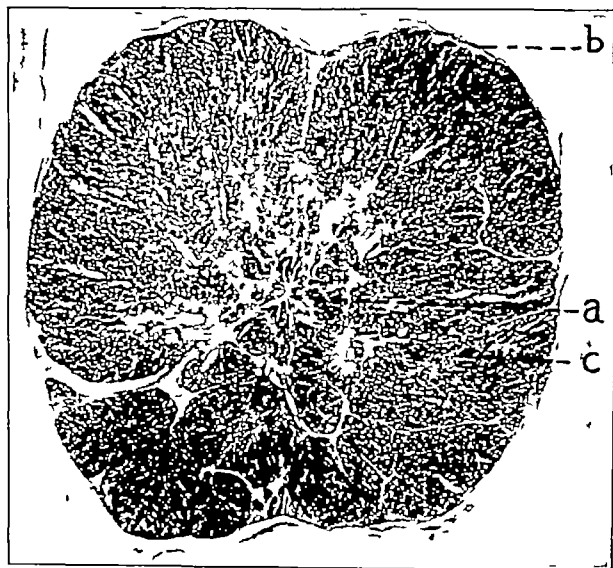


Fig. 1—Normal dog prostate: a, urethra; b, capsule; c, normal glandular structure.

and scarcely any mention was made regarding this procedure until the recent publications by Grant² and McCarthy³ in 1935 recommended direct intraprostatic

From the Laboratory of Surgical Research, University of Illinois College of Medicine.

Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

¹ Cano, F. G., Townsend, T. M., and Valentine, J. J. *M. Rec.* 91: 715 (April 28) 1917.

² Grant, Owsley. *Treatment of Prostatitis by Injection*. *J. Urol.* 29: 749-753 (June) 1933. *Treatment of Chronic Prostatitis by Injection*. *ibid.* 33: 631-638 (May) 1935.

³ McCarthy, J. F. *Recent Advances in Instrumental Urology*. *J. Urol.* 33: 303-309 (March) 1935.

injection through the panendoscope Townsend⁴ in 1936 reported further observations on intraprostatic injections

Chronic prostatitis is a very frequent clinical condition which too often resists intelligent and diligent prolonged treatment. Any method, therefore, that can



Fig 2—Normal dog prostate showing the normal histologic appearance and glandular arrangement of dog prostate

safely be applied to hasten the cure or shorten the course of this common ailment deserves careful consideration

Grant² has injected from 10 to 20 cc of 1 per cent aqueous solution of mercurochrome directly into the lobes of the prostate gland through a needle inserted perineally in more than 400 instances. He reports almost universal amelioration of symptoms and a rapidity of cure not usually obtained by other methods of treatment. He further states that this procedure has been carried out without a single untoward result in any instance.

McCarthy injected from 3 to 8 cc of colloidal silver solution into each lateral lobe of the prostate through



Fig 3—Dog prostate two weeks after injection of 2 cc. of 2 per cent mercurochrome. *a* chronic inflammation *b* fibrous tissue *c* areas of necrosis. Marked glandular destruction, chronic inflammation and fibrosis.

the urethroscope. This procedure was carried out in each of forty patients on from three to seventeen occasions. He states that all but two of these patients reported definite improvement and sixteen were discharged as clinically cured.

No mention is made in any published paper on the subject of intraprostatic injection of an attempt to determine what changes actually occur in normal prostatic tissue after it has been infiltrated with mercurochrome or colloidal silver. Grant merely states that at the outset of his work he "injected a few dogs' gland and they seemed none the worse." All exponents of this method seem to infer that the rationale of the procedure is based on the direct bactericidal effect of the injected solution for the organisms retained in the prostatic acini and ducts. Grant states that he does not attempt to say definitely how mercurochrome acts when injected into the prostate. It is his belief that "in this type of injection the mercurochrome acts with definite germicidal properties, and since it does remain in the gland for an extended period it prevents further bacterial growth. It does not seem likely that it acts in some obscure biological way as it does when injected intravenously. Indeed the entire basis of our hypoth-



Fig 4—Dog prostate two weeks after injection of 2 cc. of 2 per cent mercurochrome showing marked glandular destruction and fibrosis.

esis is the introduction of some antiseptic directly into the seat of inflammation in an endeavor to check that process by direct action."

Townsend states that substances injected into the prostate diffuse throughout the gland and that since substances so injected find their way into prostatic blood vessels, no medicament should be introduced into the gland that will not be tolerated by the general circulation.

This study was undertaken to determine the early and late tissue effects occurring in the prostate gland of dogs after direct injection. Our present report deals only with those injected with mercurochrome solution and colloidal silver solution the substance recommended by Grant and McCarthy in their recent publications. The effects of other drugs are also being studied and will be given in a later publication.

TECHNIC

The prostate gland in fully grown dogs being extra vesicular is easily isolated extraperitoneally in the peritoneal space. An incision paralleling and slightly lateral

to the penis permits a muscle splitting incision and rapid exposure of the entire prostate without the necessity of any instruments or other traumatic application to the gland. Injection of the gland can be made under direct vision without disturbing any structures except a small amount of periprostatic fat on the



Fig 5—Dog prostate removed seven weeks after injection of 2 cc of isotonic colloidal silver. *a* marked fibrosis, *b* areas of normal glandular tissue. Marked destruction of glandular tissue replaced by fibrous tissue with occasional areas of rather normal gland tissue.

superior surface. The prostate in well grown dogs is apparently from one-third to one-half the gross size of the adult human prostate, with the urethra traversing the central portion. In injecting the prostate great care was taken to avoid any trauma that might excite tissue changes not comparable to the procedure in the human being. A small needle was used and only two sites of injection were made, one on each side of the gland. Care was also taken to avoid anything that suggested overdilatation of the gland and that might conceivably produce a pressure necrosis. On this account no injection exceeded 5 cc, while the average injection was 2 cc (1 cc on each side). That the drug diffuses readily throughout the gland is apparent on inspection. The needle was moved to include six areas in each instance, and the injection was made slowly. Very little or no leakage occurred from the prostatic capsule at the site of injection after the withdrawal of the needle. All operations were done under strict aseptic technique and under phenobarbital sodium anesthesia. Incisions were closed without drainage. Fourteen dogs were injected without a postoperative death, and convalescence was uneventful without febrile reaction or apparent difficulty in voiding. The dogs were killed at the required intervals and the entire prostate was removed en masse for gross and histologic study.

For the purpose of brevity the following general summary of the gross and microscopic changes found in the dogs' prostates removed at varying periods after injection, is given rather than a detailed protocol in each instance.

PROTOCOLS

The prostate removed seven days after injection of 2 cc of 2 per cent mercurchrome showed a gross adhesion of the periprostatic fat to a moderately thickened glandular capsule. These adhesions were strictly fibrous in character. The acini in some areas appeared to be totally destroyed while in other areas there was only partial destruction. In some regions the acini were replaced by areas of hemorrhage in others by cellular infiltration and in still others by fibrous tissue. Under

higher magnification the partial or complete destruction of the acini was more apparent. The remaining lumens were filled with cellular debris, erythrocytes and small lymphocytes, plasma cells and histiocytes. The septums between the acini were thickened with dilated engorged capillaries and an infiltration by fibroblasts, small lymphocytes, histiocytes and plasma cells. In brief then, these sections showed an active hyperemia, a scattered subacute inflammatory reaction with glandular destruction and an early fibroblastic proliferation.

The prostate removed fourteen days after the injection of 2 cc of 2 per cent mercurchrome showed only slight gross adhesion of the periprostatic fat to the thickened glandular capsule. There was an almost complete destruction of the glandular structure. Some areas were of necrotic tissue, others showed cellular infiltration, and still others were replaced by fibrous tissue. Under higher magnification this marked glandular destruction associated with fibrous tissue replacement was seen more clearly. Thus the specimen fourteen days after injection showed merely a more advanced stage of the changes noted after seven days.

The prostate removed sixty-three days after injection of 2 cc of 2 per cent mercurchrome showed grossly, and under low power magnification, similar but more advanced changes as compared with the glands removed seven and fourteen days after injection. Under high magnification there was partial or complete glandular destruction, a moderate and apparently decreasing cellular infiltration but a more marked fibroblastic proliferation.

INJECTIONS OF COLLOIDAL SILVER

The prostate removed fourteen days after injection of 2 cc of isotonic solution of colloidal silver showed grossly a very marked destruction of all acini, with areas of necrosis, fibrosis and cellular infiltration. Higher magnification revealed cellular debris, the remnants of a necrotic acinus and marked cellular infiltration. Under still higher magnification these infiltrating cells consisted of small lymphocytes, plasma cells, fibroblasts and histiocytes. Here again was observed a diffuse destruction



Fig 6—Dog prostate seven weeks after injection of 2 cc of isotonic colloidal silver solution showing marked glandular destruction and fibrosis.

of the glandular structure associated with a chronic inflammatory reaction and a beginning fibrosis of the gland as a whole.

The prostate removed forty-nine days after injection of 2 cc of isotonic colloidal silver solution showed a more marked gross reaction in the gland amounting to an almost complete destruction of all acini, subsiding evidence of chronic inflammation and a dense fibrosis of the entire gland. Under higher magnification there were only scattered remnants of the gland surrounded by a fibrous tissue mass.

The prostate removed seventy days after injection of 15 cc of nonisotonic colloidal silver presented marked glandular destruction with areas of necrosis, chronic inflammation and fibrosis. Higher magnification of a discrete inflammatory area showed partially destroyed acini which were filled with small lymphocytes, plasma cells and histiocytes. The septums separating the acini were thickened and densely infiltrated with these cells. As might be expected the inflammatory reaction after injection of nonisotonic colloidal silver was more prolonged and gave evidence of more severe reaction than in the case of the isotonic solution.

CONCLUSIONS

Intraprostatic injection in full grown dogs with solutions of mercurochrome and colloidal silver, causes chronic inflammatory reactions, scattered areas of necrosis and complete or partial destruction of the acini. Diffuse fibrosis of the gland occurs subsequently.

55 East Washington Street—4458 West Madison Street

ABSTRACT OF DISCUSSION

DR. EARL EWERT, Chicago Drs O'Connor and Ladd have portrayed graphically on postmortem specimens what must occur in man when chemicals are injected into the prostatic gland. The fibroblastic proliferation has persisted after sixty-three days, and this to our minds is one of the most important observations in this investigation. In other words, two months after the use of injected chemicals the resulting tissue reaction was still proceeding. On this basis I wonder whether the end result in some of these will not be a small, firm, scarred prostate, for instance total sclerosis of the prostate with the rigid contracted bladder neck, and hence a fibrous median bar as a sequel. No doubt many of these patients with chronic prostatitis are doomed to this condition eventually, but I think that a certain percentage will be hastened years ahead of time. In 1931 I injected intraprostatically a filtered broth culture of the gonococci as had been done by previous workers. I was impressed by several facts. First many infected prostates are harder than they feel. Hence diffusion of the injected material tends to remain in one site. The gland itself is small. This, then, tends to deposit much material in a smaller area with accordingly a greater local tissue reaction, favorable or unfavorable. Second, the needles bend because of the hardness of the tissue and hence the evident futility of massaging some of these glands. A more rational procedure seems to me to be that of G. J. Thompson and D. M. Davis of urethroscopic observation the scalloping of the stenotic rigid ducts by the cutting loop and the Collings cutter. This provides drainage, and I have observed that the fibrosis proceeding in these glands may be stopped with a resultant improvement in their symptoms. A chronically inflamed gland for many years has already a fibroblastic proliferation with ducts that are stenotic and draining poorly, and I feel that this type of gland can better be handled by providing adequate drainage by the urethra. Perhaps Grant and his co-workers select their cases more carefully and eliminate the old scarred prostates with preprostatic infiltrations. I have not injected any prostates with mercurochrome or other chemicals and I should like to know the results on these glands four or five years later.

DR. VINCENT J. O'CONNOR, Chicago We offer this paper before this section, where we feel it properly belongs, and while we make no attempt to draw a clinical analysis we wish to emphasize the importance of experimental control of a therapeutic procedure before it is recommended by urologists to the profession at large. It may be that the production of a certain amount of fibrosis in the large boggy chronically infected prostate is a good therapeutic procedure. From this experimental study it would seem that the beneficial clinical results credited to intraprostatic injection must be due to fibrotic obliteration of infected acini rather than to a localized sterilization of the injected tissues. These prostates in dogs were injected with a small amount of solution and yet the gross changes are severe and diffuse. These glands were normal and not infected at the time of injection and I believe that all of us would approach such a procedure using the solutions studied, with considerable deliberation and caution.

BONE GROWTH DISTURBANCE FOLLOWING HEMATOGENOUS ACUTE OSTEOMYELITIS

JOHN C. WILSON, MD

AND

FRANCIS M. McKEEVER, MD

LOS ANGELES

Medical literature of the past twenty years contains very little information relative to bone growth change, resulting from osteomyelitis in children. Speed¹ in 1922 called attention to the alteration in adolescent bones following pyogenic infection and made suggestions for their treatment. A review of sixty-four patients with ninety individual ulnar infections, who suffered from acute hematogenous osteomyelitis leads us to believe that disturbances in the conformation of bone are relatively frequent. An attempt has been made to determine (1) the common variations in the contour of

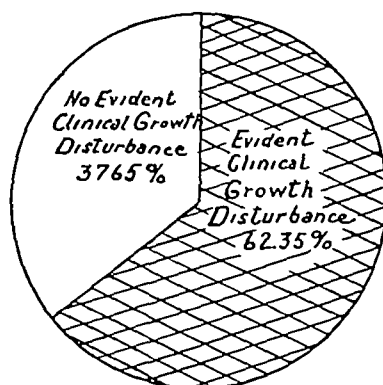


Fig 4—Percentage of total number of patients showing evident clinical growth disturbance

the long bones and the bones of the feet, (2) the relationship of the location of the focus of infection in the individual bone to the subsequent growth disturbances and (3) the bearing of the time of surgical drainage on disturbances of growth.

The ninety foci of infection were distributed as follows: tibia thirty, femur twenty-nine, humerus ten, radius five, os calcis five, fibula three, metatarsals three, ulna two, phalanges two and clavicle one.

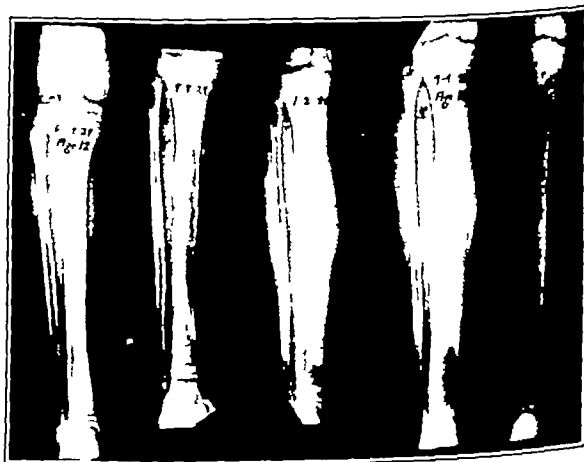


Fig 6—Perimetric hypertrophy showing evidence of subperiosteal displacement at the end of the first three months. Perimetric hypertrophy limited by periosteal displacement. Note marked but incomplete reconstruction of shaft.

Infections of the vertebrae, scapula, ribs and bones of the pelvis have not been included. Accurate mea-

From the Orthopedic Department of Children's Hospital. Because of lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the authors' reprints. Read before the Section on Orthopedic Surgery at the Eighty-Seventh Annual Session of the American Medical Association, San Francisco, May 14, 1922. ¹ Speed, Kellogg, Surg., Gynec. & Obst. 34:469 (April) 1922.

measurements of the amount of distortion were not possible. Osteomyelitis of the terminal phalanges was also excluded because the infection is by direct extension and not through the blood stream.

The individual bones comprising this study readily fall into two groups. The first one embraces the long bones with a diaphysis and one or more terminal epiphyses. There were fifty-nine cases in this group presenting eighty-five individual osteomyelitic infections. The second group includes five cases of hematogenous acute osteomyelitis of the os calcis. The os calcis grows by accretion and has no diaphysis or terminal epiphyses. The apophysis is comparable to the tibial tubercle and serves as a muscular attachment. The changes in contour of this bone are due to factors other than epiphyseal disturbance. The undeveloped but firmly attached periosteum of the os calcis influences the changes in shape that follow acute osteomyelitis.

AGE INCIDENCE

The onset of infection was in all cases prior to the twelfth year. The patients at the time of this report

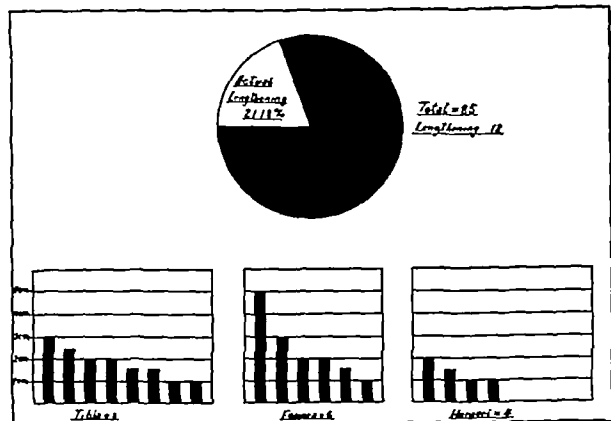


Fig. 7—Total number of infections producing lengthening of bones with distribution as to individual bones and amount of lengthening.

were between 5 and 19 years of age. The largest group was between 13 and 19 years of age when they were last examined.

No patients were included in this survey who had not been observed for at least two years. One patient has been under observation for fourteen years.

CLASSIFICATION OF GROWTH DISTURBANCES

An attempt has been made to classify in a simple manner the changes that occurred in the long bones with one or more terminal epiphyses, as follows:

- I Primary variations
 - (a) Perimetric hypertrophy
 - (b) Lengthening
 - (c) Shortening
 - (d) Directional changes
 - (1) Coxa valga.
 - (2) Bowing anteroposterior and lateral
- II Secondary variations
 - (a) Disturbance of joint inclination
 - (1) Genu valgum
 - (2) Medial deviation of the ankle.
 - (3) Lateral deviation of the ankle.
- III Concomitant variations
 - (a) Compensatory lengthening of uninfected parallel bones
 - (b) Shortening and diminution of size of feet without infection in any of the component osseous structures

It is rather striking to note that perimetric hypertrophy followed all infections of the long bone in this group of patients. In eighteen of these patients the disturbance was slight, varying from 1 mm to 2.5 mm, but nevertheless was always demonstrable by roentgen examination. This condition could not be detected in the femur by clinical examination because of the well developed muscle covering. On the other hand, a small degree of distortion in the tibia, because of its superficial location, was easily detected without the aid of x-ray examination. Thirty-two of eighty-five infected long bones, or 37.65 per cent, escaped without a disturbance in length or direction. In other words, fifty-three, or 62.35 per cent, of infected long bones had obvious deformity due to disturbance in growth, which was easily detected by clinical examination.

Of the thirty-two foci that recovered without a disturbance of growth, eighteen, or 56.28 per cent, were operated on late after the tenth day of the infection, and fourteen, or 43.72 per cent, were operated on prior to the tenth day of the illness. This would seem to indicate that early drainage plays no part in the prevention of growth aberrations and, conversely, that deferring surgical intervention until the individual has an opportunity to localize the infection does not enhance the morbidity of growth disturbances.

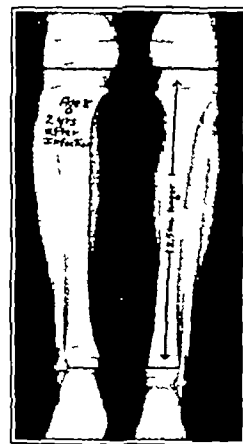


Fig. 8—Tibia lengthened 2.5 cm. There is no disturbance of the ankle joint inclination because of compensatory lengthening of the fibula.

PERIMETRIC HYPERTROPHY

A study of the roentgenograms of infected bones clearly indicates that perimetric hypertrophy is determined by periosteal displacement and is also limited by the extent of this displacement. A study of the roentgenograms in early stages of the disease will often

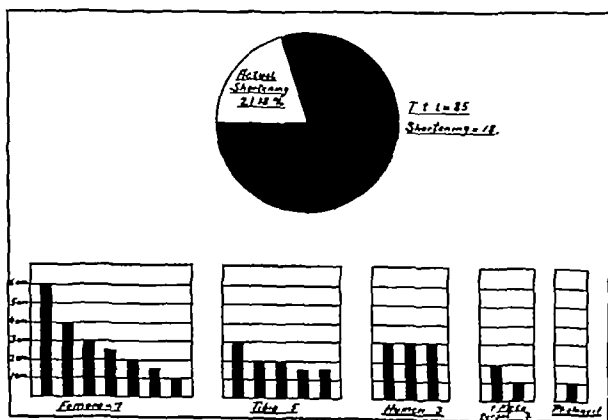


Fig. 9—Total number of infections producing shortening of bones with distribution as to individual bones and amount of shortening.

reveal the extent of periosteal elevation and from this a prediction may be made regarding the extent of this perimetric hypertrophy. This increase in the transverse diameter of the long bones occurs very rapidly during the first three months and then gradually subsides. While the bone tends to resume its normal conformation, the subperiosteal new bone never entirely dis-

appears. It is also of interest to note that areas from which the periosteum has been resected show no evidence of perimetric thickening. It was also observed that perimetric hypertrophy does not occur to a great degree in centrally placed Brodie's abscesses. This is due to the fact that the inflammatory reaction is not of sufficient degree to cause marked stimulation of the bone producing power of the periosteum. In eighteen



Fig. 11—Disproportionate bone growth of tibia and fibula due to premature closure of the distal tibial epiphysis. Mechanics of ankle joint markedly disturbed.

infections in which the perimetric hypertrophy did not exceed 0.25 cm there was little if any periosteal reaction. The centrally placed limited foci are included in this group. In fifty-six of the infected bones the perimetric hypertrophy ranged from 0.5 to 1.5 cm. In these instances the periosteal reaction was plainly demonstrable by roentgenogram and varied in degree.

Incidence of Moderate and Marked Degree of Perimetric Hypertrophy

Perimetric Hypertrophy	Lesions	Periosteal Reaction	Time		
			Drained Early	Drained Late	No Operation
0 to 0.25 cm	20	None many central abscesses	2	17	1
0.25 to 1.5 cm	50	Moderate and marked	25	31	0
1.5 to 3 cm	9	Always very marked	5	4	0
Os calcis No perimetric hypertrophy	5	None	5	0	0

from moderate to marked. Perimetric hypertrophy was by actual measurement from 1.5 to 3 cm in thickness in nine of the infected bones. This was classified as extreme.



Fig. 12—A early infection three weeks after onset in upper third of femur. B thirteen months subsequent to infection right trochanteric epiphysis closed with beginning coxa valga deformity. C right trochanteric epiphysis closed nine years after onset of infection permanent coxa valga deformity of right femur of marked degree.

The incidence of moderate and marked degree of perimetric hypertrophy was not materially decreased by early drainage of infected bones as indicated in the accompanying table.

The periosteum of the os calcis is firmly adherent and is stripped with difficulty by edema or infectious

exudate. Therefore, enlargement of the os calcis would not be anticipated because of the relationship that seems to exist between periosteal stripping and perimetric hypertrophy. The changes of contour in five cases of osteomyelitis of the os calcis were attributed to bone softening and muscle tension.

The activity of the periosteum in the production of new bone is of prime importance in the repair of defects due to sequestration and loss of substance through surgical intervention. These observations bespeak a word of warning to the surgeon and emphasize the importance of careful preservation of this important anatomic structure.

LENGTHENING

Eighteen of eighty-five infected long bones, or 21.18 per cent, showed an actual increase in the length of the bone involved.

The infection in all patients with bone lengthening was located in the diaphysis and not necessarily in juxtaposition to the epiphyses. In three instances of lengthening of the femur the infection in the shaft was located near the epiphysis of the trochanter major. As a result of the hyperemia caused by these foci the angle between the shaft and the neck of the femur was



Fig. 13—Femur with marked anterior and lateral bowing associated with actual lengthening.

markedly distorted, causing a coxa valga deformity. This deformity was of course responsible in part for the actual lengthening of the femur. This was specifically so in the patient who exhibited 5 cm of increased length of the leg.

Four of the eighteen patients with infections that produced lengthening of the long bones were operated on within ten days after the onset of the acute osteomyelitis. Drainage was instituted in fourteen at varying periods after the tenth day of the onset of the infection. We have been unable to discover any definite relationship between the time of drainage and the extent of disturbance when the infection is located within the diaphysis. An endeavor was made to correlate the time of drainage of the osteomyelitic infection with the extent of disturbance of bone growth. Our observations seem to indicate that the time of operation has no bearing on this later phase of the disease.

Elongation of the infected bone in an extremity in which there is a companion bone, such as the leg or the forearm is associated with an actual lengthening of the uninvolved bone. It is also of interest to note that this increasing length of the infected bone produces a corresponding elongation of the uninfected bone without disturbing the mechanics of the joint formed by the articular extremities of the bone in question. The abnormal growth of the infected bone

bone exerts a pulsion force which is distributed in such a manner that the longitudinal axis of the normal bone is not distorted

SHORTENING

Eighteen of eighty-five infections or 21.18 per cent, caused an actual decrease in the length of the involved bone

The focus of osteomyelitis which caused interruption of growth was located in the diaphysis adjacent to the epiphyseal cartilage. X-ray examination showed the epiphyseal line to be interrupted, narrowed or prematurely closed at the periphery. The greatest amount of shortening, which was 6 cm, occurred in a femur in which the infection was complicated by a pathologic fracture. The shortening was due in part to a loss of substance at the point of fracture, but a considerable amount of shortening was nevertheless due to premature closure of the distal femoral epiphysis.

Five of eighteen infections, or 27.7 per cent, which caused shortening were drained within the first ten days. Thirteen, or 62.3 per cent, were drained later.

This evidence is inconclusive but suggests that the time of drainage has little to do with the shortening.

There were four small central lesions in the epiphyseal plate. These show at the present time roentgenologic evidence of excellent repair. Shortening or directional disturbance of the growth of bone did not ensue because of the fact that the infected areas did not encroach on the epiphyseal margins. Three of these foci of infection were located in the end of the radius and one in the lower end of the ulna.

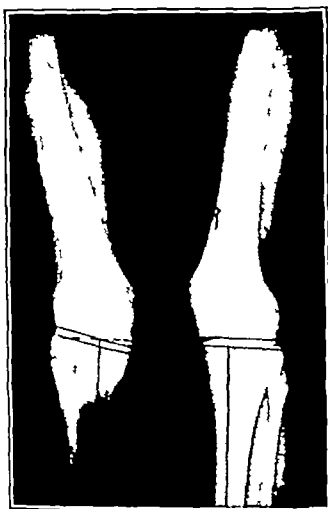


Fig 14—Knock knee deformity due to premature closure of the lateral half of the femoral epiphysis

The physiologic disturbance in the extremity supported by two bones is of course pronounced when infection occurs in one bone. The rate of growth of the uninjured bone is not retarded, in fact, in some cases growth seems to be accelerated. The rapidly growing uninfected bone acts as a pulsion force, bending the shortened infected bone. On the other hand the shortened infected bone acts as a bow string, or traction force, causing bending of the rapidly growing uninjured bone. This condition was noted in the forearm and in the leg.

Under these circumstances the mechanics of the joint formed by the paralleling bones will be markedly altered, owing to medial or lateral tilting of the articular surfaces. This is particularly noted in the ankle joint. A disturbance corresponding to Madelung's deformity was seen at the wrist even though there was no tilting of the joint surface.

COXA VALGA

Growth of the upper end of the femur occurs at the capital and trochanteric epiphyses. In lower animals this is one epiphysis, but with the assumption of the upright position and the development of a well defined

joint capsule a complete division occurs in the epiphyseal plate. This survey reveals that infections in the upper end of the femur which involve the trochanteric epiphysis, causing its premature closure, result in a coxa valga deformity of the neck of the femur. The reason for this is quite evident when one considers the fact that growth on the medial aspect of the neck of the femur will continue at a normal or accelerated rate.

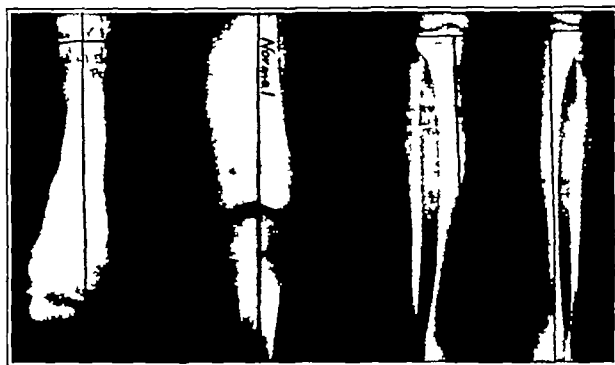


Fig 15—Knock knee deformity. A due to medial bowing of the lower third of the femur. B due to medial bowing of the upper third of the tibia.

while that on the outer aspect of the femur is retarded, owing to a disturbance in the trochanteric epiphysis. This coxa valga deformity will result in actual lengthening of the femur with concomitant pelvic tilt and scoliosis.

BOWING OF THE LONG BONES

Four patients were found to have definite anterior bowing in the lower third of the femur, and in one patient anterior bowing developed in the lower third of

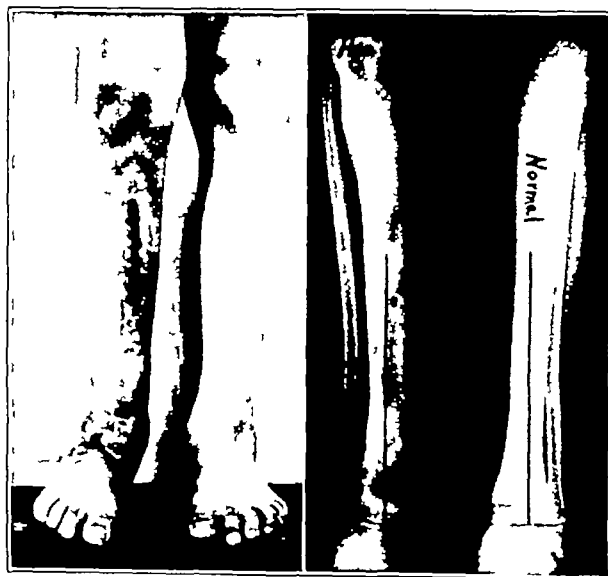


Fig 16—Lateral deviation of ankle with disturbance of weight bearing due to growth disturbance in the lower tibial epiphysis.

the tibia. This deformity was quite marked and did not require roentgen examination for its detection. In two instances the femur showed an actual lengthening. The tibia was also elongated.

LATERAL BOWING

Slight degrees of medial and lateral bowing were frequently evident in the roentgenograms. This bowing was usually at the operative site and was not clinically

demonstrable. A few instances of medial bowing of single bones caused a knock knee deformity. Lateral bowing was observed twice in the bones of the forearm. While this bowing of the long bones is classified as a growth disturbance, it differs somewhat from those described in connection with epiphyseal disturbances. This bowing is, however, a definite clinical entity and is thought to be due to muscle pull on bones, which because of infection, have lost some of their normal tensile strength.

GENU VALGUM

Knock knee deformity was present in ten cases as a result of infection involving the tibia or femur. It was observed that it develops either from a direct involvement of the epiphysis or from its unilateral stimulation. The stimulation of the medial half of the distal epiphysis of the femur will cause an overgrowth of the medial femoral condyle and a knock knee deformity. This was present in four patients. A retardation or premature closure of the lateral half of the distal femoral epiphysis will also cause a knock knee deformity. This creates an imbalance in growth so that the normal activity of the medial half of the epiphysis is sufficient to produce a knock knee deformity. This was found in one instance. Medial bowing of the lower third of the femur caused knock knee deformity in one instance because of the abnormal line of weight bearing. For the same reason, medial bowing of the upper third of the tibia caused a knock knee deformity in four patients. It also may be presumed

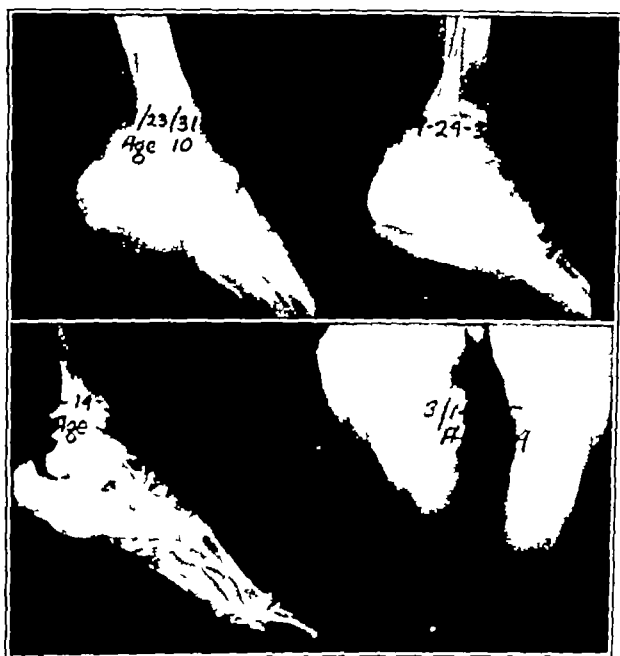


Fig. 17—Distortion of os calcis due to compression without perimetric hypertrophy.

that a genu valgum deformity will result from a premature closure of the lateral aspect of the upper tibial epiphysis. It might also result from a stimulation of the medial half of the upper tibial epiphysis due to circumjacent infection. There was no instance of this distribution of infection in this series of cases. Lateral deviation of the ankle joint may follow as a result of a premature closure of the lateral half of the lower tibial epiphysis as illustrated by figure 16.

OS CALCIS

The reaction of the os calcis to infection differs sufficiently from that of other bones to warrant special consideration. It was noticed that small abscesses may occur in the body of the os calcis and result in recovery without change in shape or consistency of the bone.

Perimetric hypertrophy does not follow hematogenous acute osteomyelitis of the os calcis because of the

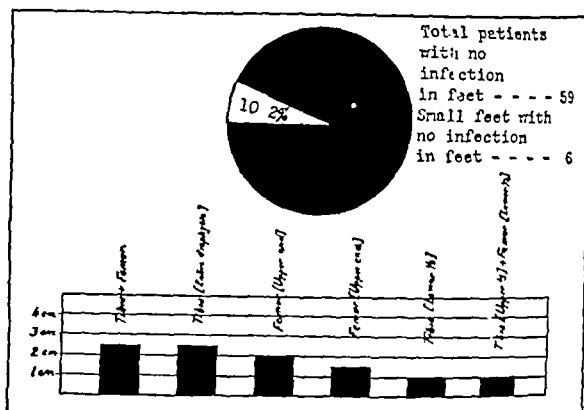


Fig. 19—Graphic illustration of percentage of small feet without infections in bones of foot. Amount of shortening of feet with location of infection.

adherent periosteum. Infection of the calcaneal apophysis did not produce shortening of the infected bone or of the foot, but extensive infection of the body of the os calcis did cause shortening both of the infected bone and of the entire foot. This may be explained by the fact that growth of the os calcis is by accretion. The calcaneal apophysis is comparable to the tibial tubercle in that it serves only as a muscular attachment. The os calcis did exhibit a boat-like deformity with broadening despite the fact that weight bearing was excluded. This deformity is attributed to gradual compression of bone, softened by infection, which is unable to withstand normal muscle tension of the powerful gastrocnemius-soleus muscle group.

METATARSAL BONE AND PHALANXES

The metatarsal bones and phalanges show a great ability to regenerate and restore the normal contour. This is despite the fact that the osteomyelitic infection is associated with extensive destruction, sequestration and perimetric hypertrophy. Even though an epiphysis may be destroyed or the epiphyseal line of an individual metatarsal bone or phalanx fused at a premature time the rate of growth of paralleling and contiguous bones is not changed. Directional disturbances are not produced. Shortening of the infected bone may follow but this influences only the growth and development of the individual digit. There is perhaps one exception and that pertains to extensive infection of the first metatarsal bone. Because of its location this may lead to some disturbance in contour of the medial border of the foot causing faulty and painful weight bearing.

SMALL FEET

Decrease in the size of the foot was present in 59 of fifty-nine patients or 10.2 per cent despite the fact that the bony structure of the foot was entirely free from infection. Two instances of this growth disturbance followed a lesion of the tibia, one in extensive diaphyseal infection and the other in the lower third of the shaft. Small feet were found in 1.0

instances in which a focus was located in both the tibia and the femur of the involved side. Two followed infections in the upper third of the femur. The difference in the size of the feet was sufficient in four instances to require special shoes.

The explanation of this disturbance of the growth of the foot is not clear. Patients in whom it occurred were not subjected to prolonged inactivity, and the extremities were not bound in plaster-of-paris dressings for unusually long periods. In fact, the term of splinting for some of the patients in whom small feet were found did not exceed eight weeks.

SUMMARY

Fifty-nine patients under 12 years of age with eighty-five individual foci of acute hematogenous osteomyelitis in long bones and five patients with acute hematogenous osteomyelitis of the os calcis were followed for periods of from two to fourteen years.

1 Fifty-three of eighty-five foci, or 62.35 per cent, caused growth disturbances that were obvious by clinical examination.

2 Perimetric hypertrophy was present in 100 per cent of infections in long bones.

3 Actual lengthening of long bones resulted in eighteen of eighty-five infections, or 21.18 per cent. The infections that resulted in lengthening were always located in the diaphysis and left the epiphyseal line undamaged.

4 Actual shortening of long bones resulted in eighteen of eighty-five, or 21.18 per cent. The infections that caused shortening in all instances were in the region of the epiphyseal line, and premature changes in the epiphyseal lines were evidenced by roentgenogram.

5 Infection in proximity to the trochanteric epiphysis of the femur causing premature closure of the epiphyseal line resulted in the occurrence of coxa valga deformity adequate to cause actual lengthening of the femur.

6 Anteroposterior, medial or lateral bowing due to muscle pull on bones decalcified by infection was common.

7 Disturbances of joint inclination with severe alteration of joint mechanics resulted from bowing of the long bones adjacent to the joint, or from stimulation or retardation of a portion of the epiphyseal zone of a bone entering into the formation of a joint.

8 Retardation of the growth of the entire foot resulted in six of fifty-nine patients, or 10.2 per cent, in whom the bones of the foot were entirely free of infection.

9 The metatarsal bones showed great ability to reconstruct their normal contour after severe disturbances. The adjacent metatarsal bones were not influenced by growth disturbance in their neighboring bones.

10 Perimetric hypertrophy did not occur in the os calcis. Compression and broadening of the os calcis followed extensive infections of the body and resulted from muscle tension.

11 Early operative intervention in this series of osteomyelitic infections did not decrease the frequency of growth disturbances.

1136 West Sixth Street.

ABSTRACT OF DISCUSSION

DR D B PHEMISTER, Chicago. It is well that the authors have called attention to this condition because it has not received sufficient consideration. As they pointed out, the most important disturbance that arises is arrest of longitudinal growth of the shaft. That may be complete or partial. I want to call attention to the fact that partial destruction of the epiphyseal cartilage line may not result in arrested longitudinal growth. I have seen a few instances of osteomyelitis involving the metaphysis in which an abscess perforated the central portion of the cartilage into the epiphysis. Drainage of the abscess by decortication of the metaphyseal portion has in some cases resulted in healing without disturbance of longitudinal growth, but if the cartilage plate is destroyed at the periphery there is apt to be partial growth arrest with curvature and shortening of the bone. Growth arrest is relatively frequent at the upper end of the femur. If it is at the capital epiphysis and develops in young children there may be considerable upward growth of the greater trochanter, but in older children this is not the case. Osteomyelitis of the ilium may extend into and destroy the epiphysis of the bone along the sacro-iliac or hip joint, where it consists simply of a layer of articular cartilage. This results in growth arrest of the ilium with oblique contracture of the pelvis with elevation of the acetabulum. In the female there may be difficulty in labor from the pelvic deformity.

ACUTE HEMATOGENOUS OSTEOMYELITIS

AN ANALYSIS OF SEVENTY-FIVE CASES

ROBERT CRAWFORD ROBERTSON, M.D.
Orthopedic Surgeon, Baroness Erlanger and Children's Hospitals
CHATTANOOGA, TENN.

The essential pathologic condition in acute hematogenous osteomyelitis is a blood stream infection complicated by local infection of one or more bones. Within the past fifteen years the clinical trend has been toward early diagnosis and prompt surgical drainage of an increasingly conservative type. Diaphysectomy and tunneling have been largely replaced by drilling and removal of a cortical window at the



Fig. 1—White girl aged 13 years. Cortex drilled and window removed sixty hours following onset under local anesthesia. Subperiosteal and subcortical abscess found. A, Nov. 2, 1933, one month after drainage. Localized area of destruction. B, March 12, 1935, thirty months after drainage. Bone well healed without sequestration. Wound healing time two and one-half months.

earliest possible moment. Early drainage is advocated on the grounds that infection first occurs within the medulla, usually in the metaphyseal region, from which it follows the lines of least resistance, resulting in extensive necrosis and subsequent sequestration. This belief is supported by the clinical observations of

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Starr¹ and the experimental work of Robertson² and Kistler³. By early drainage of the bone this destruction is thought to be prevented or minimized. On the other hand, Wilensky⁴ contends that the pathologic condition follows embolism and thrombosis within some portion of the circulatory system of the bone

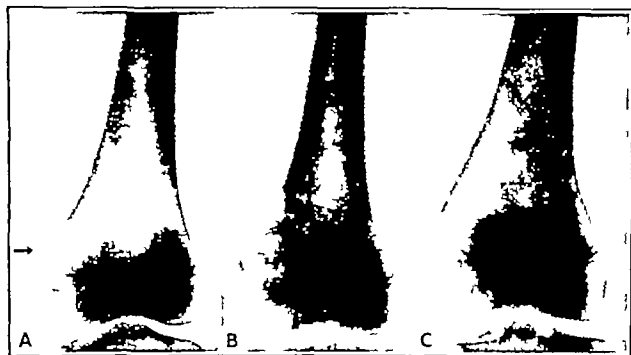


Fig. 2—White boy aged 12 years. Cortex drilled and window removed five days following onset. Subperiosteal and subcortical abscess found. A Oct 3, 1932 five days following onset. Localized area of decreased density. B Nov 5, 1932 one month after drainage. Small sequestrum within sharply localized area of destruction. C Aug 31, 1934 twenty two months after drainage. Bone well healed with spontaneous extrusion of sequestrum. Wound healing time twelve months.

He states that a fluctuant abscess is the only indication for surgery during the acute state, as early drainage does not remove the exciting cause while by conservatism many operations are avoided.



Fig. 3—White girl aged 2 years, Sept 5, 1934 four months after drainage of hip. Symptoms of sixty-four hours duration. Site of infection ilium. Streptococcus recovered from blood and wound. No sequestration. Wound healing time two months.

The objectives of treatment are the saving of life and limb and the healing of the infected bone with minimum delay. Healing without sequestration is the result to be desired. Published series report a widely

varying mortality rate of from 15 to 26 per cent, averaging about 12 per cent. Although the statement is made by many authors that early operation results in healing without sequestration, no report of a series recording such results has been found. Reports of series analyzing mortality, sequestration and healing time should be of value in determining the clinical merits of early and late surgical drainage.

In this series of seventy-five successive, unselected private and clinical cases that I have treated within the past nine years, only definitely acute, hematogenous pyogenic cases are included. While it is believed that the pathologic condition present is the true criterion of acuteness rather than the duration of the disease, it was found necessary to select some time limit in determining acuity. Twenty-two days was arbitrarily chosen as all cases that could be considered acute from a pathologic and clinical point of view fell within this limit. To minimize the possibility of including cases of primary and extension types, the small bones of the hand and foot and the mandible were excluded. The principle

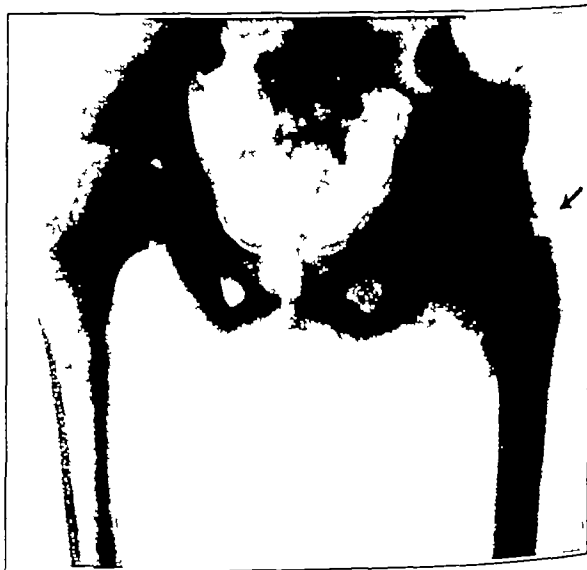


Fig. 4—White boy aged 8 years June 4, 1932 three weeks after drainage of hip. Symptoms of seven days duration. Site of infection, femoral neck. No growth recovered from blood or wound. No sequestration. Wound healing time two months.

of early drainage was followed in all. A follow up of from six months to eight years has been obtained in each case. The cases comprising the series are divided on the basis of results into four groups.

In the series 61.3 per cent were males. Although all ages are represented, 72 per cent of the cases occurred between the ages of 5 and 15 years.

The average yearly admission to the general hospital (Baroness Erlanger) is 6,242, of which 26.3 per cent is Negro. The average yearly admission to the Children's Hospital is 1,062, of which 17.4 per cent is Negro. Both hospitals are operated by the city and county and have proportionately large charity services. It is felt that the small ratio of Negroes in this series (6.3 per cent) indicates a relative racial immunity in this section.

Definite predisposing infection was not found in 45.3 per cent and definite predisposing trauma was considered absent in 62.6 per cent. In the group considered definitely traumatic is included a fracture epiphyseal separation of the proximal end of the humerus in a Negro boy aged 15 years. Two days

1 Starr C. L. Acute Hematogenous Osteomyelitis. Arch Surg 41: 56-587 (May) 1922.

2 Robertson D. E. Acute Hematogenous Osteomyelitis. J Bone & Joint Surg 9: 8-23 (Jan) 1927.

3 Kistler G. H. Sequences of Experimental Bacterial Infection of the Femur in Rabbits. Surg., Gynec. & Obst. 60: 913-925 (May) 1935.

4 Wilensky A. O. Osteomyelitis. Its Pathogenesis, Symptomatology and Treatment, New York, Macmillan Company 1934.

following the fracture, symptoms of acute local infection appeared. Fracture and epiphyseal separation preceding the onset of acute symptoms have been mentioned by Rose and Carless,⁵ Robertson² and Beekman⁶.

The distal end of the femur or the proximal end of the tibia was involved in 45.3 per cent. This combination has been previously noted and is con-

TABLE 1.—Sex Age Race and Predisposing Factors

	I	II Small, Localized Seques- trums	III Extruded Seques- tration Requiring Surgery	IV Deaths (8 Cases)	Total (70 Cases)
1 Sex	No Seques- tration (19 Cases)	Extruded Sponta- neously (6 Cases)	Seques- tration (42 Cases)		
Males	17	5	24	4	46
Females	6	1	18	4	29
2 Age	6 wks 64 yrs	10 yrs 15 yrs	20 yrs 21 yrs	9 mos 45 yrs	
Under 2 yrs	3			1	4
2-5 yrs	2		9	1	5
5-10 yrs	6		23	2	31
10-15 yrs	3	8	11	3	25
15-20 yrs			5		5
20-25 yrs			1		1
25-30 yrs	1				1
30-35 yrs	1				1
35-40 yrs					
40-45 yrs	2				2
45-50 yrs				1	1
50-55 yrs					
55-60 yrs					
60-65 yrs	1				1
Average	15.6 yrs	11.6 yrs	9.2 yrs	12.2 yrs	10.1 yrs
3 Race					
White	18	0	33	8	59
Negro	1		4		5
4 Predisposing factors					
Infection	6	4	91	1	34
None found	7	1	10	2	20
Superficial	4		7	2	13
Head			2	1	3
Respiratory			2		2
Genito-urinary			2		2
Two or more	2	1			3
Trauma					
None	12	3	20	7	42
Considered definite	7	3	17	1	28

sidered by Beekman⁶ to be the result of frequent epiphyseal strains in this area. Involvement of two bones was found in 4 per cent of the group on admission to the hospital.

Pathologic dislocation of the hip was present in a girl 10 months of age with involvement of the femoral neck of twenty-two days' duration. A soft tissue abscess was present. Shelf operation was performed two years after onset without exacerbation.

A staphylococcus was found singly in 69.3 per cent of wounds and in combination with a streptococcus in one additional case. It occurred singly in 24 per cent of blood cultures and in combination with a streptococcus in one additional case.

Striking contrast between the groups occurs in physical and roentgen examinations. Pain on firm local bone pressure was the predominant finding in 63.1 per cent in group I and in 47 per cent in group III, while fluctuation was found in 31.5 per cent (one half of whom were under 2 years of age) in group I and in 71.4 per cent in group III. Groups II and IV were more evenly divided.

Roentgenograms were considered negative in group I in 84.2 per cent, while in group III only 7.6 per cent were so interpreted. Early roentgen changes were seen

in 66.7 per cent of group II and in 25 per cent of group IV as early as the fifth day and were absent as late as the fourteenth day following onset in one case.

The average duration of symptoms in group I was materially less than in group IV and was approximately half that of groups II and III. The average duration in infants under 2 years of age in group I was nearly one-third greater than any other group.

In four cases, diagnosis was not considered definite on the first examination. Traction, local heat or aspiration was utilized on admission and surgical drainage deferred until the diagnosis was considered definite.

The type of drainage employed in seventy-six operations on the seventy-five patients during the acute state varied widely with the individual case. Soft tissue abscesses when present were drained and the underlying bone was not opened. Subperiosteal abscesses were incised, the underlying cortex was drilled and a cortical window was removed. When subperiosteal pus was not found the cortex was drilled, and in six of seven such cases a window was also removed. In the seventh, only drilling was performed. Repeated joint aspiration without lavage was attempted in six cases. In one it was successful, in the others subsequent surgical drainage, in one case as late as the twenty-second hospital day, was considered necessary. When associated bone and joint disorder was found, the pathologic condition of the bone was treated on the foregoing principles, and the joint was incised only if definitely purulent material was obtained on aspiration.

TABLE 2.—Classification of Bone Involved

	I	II Small, Localized Seques- trums	III Extruded Seques- tration Requiring Surgery	IV Deaths (8 Cases)	Total (76 Cases)
5. Bone Involved	No Seques- tration (19 Cases)	Extruded Sponta- neously (6 Cases)	Seques- tration (42 Cases)		
Tibia					(20)
Proximal end	3		11	2	16
Shaft	1				1
Distal end	1	1	10		12
Femur					(24)
Head	1				1
Neck	3			1	4
Trochanter	1				1
Distal end	4	3	10	1	18
Humerus					
Proximal end		2	7		9
Distal end					
Ilium					(4)
Acetabular portion	3				3
Anterior superior spine			1		1
Ulna					
Proximal end	1		2		3
Distal end					
Hip					
(Exact site undeter- mined early death)				2	2
Os calcis			1		1
Multiple (simultaneous)					(3)
Femur distal end and radius distal end				1	1
Tibia proximal end and mandible				1	1
Tibia distal end and fibula distal end	1				1

In three patients, aged 40, 27 and 13 years, drainage was performed under local anesthesia. In the two adults (one a physician) the tibia was involved with symptoms of twenty-two and forty-eight hours' duration respectively. Subperiosteal exposure of the bone at the site of localized tenderness gave no relief. When the cortex was drilled at this level, both voluntarily stated that immediate local relief was obtained. No gross pus was found in either, but culture of the medulla was positive in both cases. In the child the

⁵ Rose, William and Carless, Albert. *Manual of Surgery for Students and Practitioners*, ed. 10. New York: William Wood & Co., 1922.
⁶ Beekman, Fenwick. *Acute Hematogenous Osteomyelitis: The Relationship of Its Pathology to Prognosis and Treatment*. Ann. Surg. 88: 276-296 (Aug.) 1928.

distal end of the femur was involved with symptoms of sixty hours' duration. A subperiosteal abscess was incised without relief of pain. The cortex was drilled, with release of pus under pressure, and marked immediate relief was obtained. Culture from the wound was positive. A cortical window was removed

TABLE 3—Complications, Bacteriology and Diagnosis

	I		II		III		IV		Total	
	No Sequestration (19 Cases)		Small Localized Sequestrums Extruded Spontaneously (6 Cases)		Sequestration Requiring Surgery (42 Cases)		Deaths (8 Cases)		(75 Cases)	
	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound
6 Bone complications on admission (adjacent joint pathology omitted)										
Epiphyseal separation (distal end of femur)					3				3	
Pathologic dislocation (hip)	1								1	
7 Bacteriology										
Not on record	3		5	2	19	5	29	7	56	7
No growth	11	7	1		11		2	7	23	7
Staphylococcus albus	1	3			7	11	3	3	11	19
Staphylococcus aureus	1	1	2		5	16	1	2	10	21
Streptococcus nonhaemolyticus	1	4							1	4
Streptococcus haemolyticus	1	2							1	2
Staphylococcus aureus haemolyticus					0					11
Pneumococcus							1	1	1	1
B. pyocyaneus							1		1	
Streptococcus and staphylococcus					1					1
Staphylococcus aureus and Streptococcus haemolyticus							1		1	
8 Diagnosis										
History										
Initial symptom systemic (fever, chill or headache)	3				5		4		12	
Initial symptom local (pain)	13		0		17		4		34	
Initial symptom masked by concurrent disease	3								3	
Physical finding local (predominant)										
Fluctuation (soft tissue or joint)	0 (3*)	3			30	3			42	
Swelling and hyperemia	1	3			10				14	
Localized pain on pressure	12				2	5			19	
Initial roentgenograms										
Positive	3	4			39	2			48	
Negative	16	2			3	5			26	
Not made						1			1	

* Patients under 2 years of age

in each case following drilling. These few experiences were so striking that cortical drainage has subsequently been performed as a routine except in the face of soft tissue abscess. Postoperative treatment in all cases of this series was by the Orr method or a slight modification.

In group I 68.4 per cent of the cases presented evidence of joint infection in contrast to 23 per cent in group III and 37.5 per cent in group IV. It is considered probable that this complication with its initial severity of local symptoms, facilitated early diagnosis and hospitalization in contrast to the cases in which it was absent.

A man aged 43 with involvement of the femoral head and a woman aged 64 with involvement of the tibia and fibula in the distal ends are atypical in that the acute symptoms apparently arose from activation of a low grade lesion of Brodie's type following trauma although no previous history of local pain

could be obtained. In all cases in which a subperiosteal abscess was found, the underlying bone showed granulation tissue when opened.

Beekman⁶ reports two acute cases of the tibia with involvement of both ends of the bone and normal medulla intervening and considers both lesions of probable hematogenous origin. One similar case likewise involving the tibia was found in this series necessitating a second drainage of the opposite end of the bone. At subsequent sequestrectomy long sequestrums were found in each end of the bone with

TABLE 4—Duration of Symptoms Previous to Operation

	I		II		III		IV		Total	
	No Sequestration (19 Cases)		Small Localized Sequestrums Extruded Spontaneously (6 Cases)		Sequestration Requiring Surgery (42 Cases)		Deaths (8 Cases)		(75 Cases)	
	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound
9 Duration of symptoms at time of operation										
Under 48 hours	3								3	
2-4 days	8				5		3		16	
5-7 days	5		1		9		3		18	
8-10 days	2 (1*)				2				4	
11-13 days	1†				10				11	
14-16 days			1		2		0 (1)		3	
17-19 days	1*		1		7				9	
20-22 days	2*				4				6	
Average										
Under 2 years	1.6 days				11.5 days		0.0 days		1.6 days	
All others	4.3 days		11.8 days		11.5 days		6.8 days		6.8 days	
Group	6.0 days		11.5 days		11.5 days		6.8 days		9.6 days	

* Under 2 years of age
† Subsequent amputation

TABLE 5—Treatment

	I		II		III		IV		Total	
	No Sequestration (19 Cases)		Small Localized Sequestrums Extruded Spontaneously (6 Cases)		Sequestration Requiring Surgery (42 Cases)		Deaths (8 Cases)		(75 Cases)	
	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound	Blood	Wound
10 Treatment (initial local)										
Time										
Immediate drainage	1		0		42		8		51	
Preoperative observation (8-24 hrs)	4								4	
Type										
Abscess incised	3		4		34		4		45	
Abscess incised cortex drilled and window removed			2		7				9	
Cortex drilled and window removed	3				1		2		6	
Cortex drilled	1								1	
Joint incised and drained	5				1				6	
Soft tissue abscess incised adjacent joint aspirated in closed and drained	1†									
Repeated aspiration of joint	1								1	
Repeated aspiration of joint followed by incision and drainage	4						1		5	
Cortex drilled and window removed, adjacent joint incised and drained	1						1		2	

* Tibia (original finding) subperiosteal abscess distal end. Subsequent amputation.
† Tibia (original finding) subperiosteal abscess distal end. Subsequent amputation.
† Subsequent amputation

granulation tissue throughout the central portion of the medulla. It is felt that this is probably best explained by retrograde thrombosis plus infection, although the possibility of hematogenous origin of both lesions and direct extension of infection cannot be eliminated. Metastatic lesions were most frequent in group III which concurs with the experience of Wilson⁷

McKeever⁷ Pathologic fracture occurred twice in the distal end of the femur while in a spica cast, probably the result of the cast becoming loose following decrease of swelling, and once in the tibia during attempts to correct an equinus following incision of a soft tissue abscess

TABLE 6—Pathologic Changes, Complications and Sequelae, and Results

	I No Sequelae tration (19 Cases)	II Small Localized Sequelae trations Extruded Spontaneously (6 Cases)	III Sequelae trations Requiring Surgery (42 Cases)	IV Deaths (8 Cases)	Total (70 Cases)
11 Pathologic changes found at operation					
Soft tissue abscess	1*	3	72	2	38
Subperiosteal abscess	1	1	0†		2
Subcortical abscess	1		1†	2	4
Suppurative arthritis	9		1	3	13
No gross pus	1				3
Suppurative arthritis ruptured into adjacent soft tissue	1*				1
Subcortical abscess and adjacent suppurative arthritis	2			1	3
Soft tissue abscess of bone origin and adjacent suppurative arthritis	1				1
12 Complications and sequelae					
Direct extension (%) of infection within bone window removed at opposite end 48 hours following initial drainage (tibia)			1		1
Metastatic abscess					
Bone			9		9
Multiple (including bone)				2	2
Pathologic fracture			3		3
Epiphyseal separation and extrusion				1	1
Soft tissue abscess or adjacent suppurative arthritis following apparent arrest	1	1	7		9
13 Results					
Sequestration					
Clinical and roentgenographic			42		47
Clinical only		1			1
Not demonstrable	19				19
Healing time	22 days	4 months	Series		
Average	2 years	21 months	incomplete		
Amputation (occupational and economic)	1				1
Deaths				8	8

* Under 1 year of age

† Tibia original finding 40 hours after onset subperiosteal abscess distal end. Subcortical abscess proximal end drained 48 hours later. Staphylococcus aureus recovered from blood and wounds.

‡ Subsequent amputation

§ Thirty three cases now arrested. Healing time from 1 to 36 months average 23 4 months

The healing time in group I was roughly one-fourth that of group II and one-eighth that of group III

Amputation was performed in one case in group I because of a painful unstable knee following extension to the joint from the proximal end of the tibia. For occupational and economic reasons this was desired by the patient and would probably have been necessary at a later date regardless of his wishes

Serous effusions are not considered to be joint infections and are not included. Only those cases in which gross pus was obtained and subsequent x-ray examination revealed destructive lesions of bone adjacent to an epiphyseal line in part at least intracapsular, are reported as suppurative arthritis of bone origin

7 Wilson J C and McKeever F M. Hematogenous Acute Osteomyelitis in Children. J Bone & Joint Surg 18: 328-332 (April) 1936

Bisgard⁸ reports this complication in 19.3 per cent of a series of 217 cases of acute and chronic osteomyelitis at the University of Chicago Clinics

Adjacent suppurative arthritis of proved bone origin occurred in 24 per cent of the cases of this group. The average age (14.9 years) was in excess of the series age (10.1 years). The average duration at operation (7.9 days) was appreciably under the series duration (9.6 days). The mortality rate (22.2 per cent) was more than double that of the series (10.6 per cent). The only amputation occurred in this group

The hip was involved in 55.5 per cent of the cases in which this complication occurred

Diagnosis of the underlying bone lesion in the majority of cases was made by roentgenograms subsequent to operation. Drainage of the involved joint constituted the only drainage of the underlying bone lesion except when pathologic changes in adjacent bone made additional drainage necessary. Diagnostic aspiration was done as a routine. Lavage was not attempted in any case in this series

Positive cultures were obtained from the joint in eleven cases (61.1 per cent) of the series and in all cases of groups III and IV in which the complication

TABLE 7—Symptoms, Origin and Treatment in Adjacent Suppurative Arthritis

	I No Sequelae tration (13 Cases)	II Small Localized Sequelae trations Extruded Spontaneously (6 Cases)	III Sequelae trations Requiring Surgery (1 Joint (42 Cases)	IV Deaths (4 Joints (8 Cases)	Total (18 Joints (75 Cases)
14 Adjacent suppurative arthritis on admission (18 cases) mortality rate 22.2%					
Sex					
Males	8			3	11
Females	5		1	1	7
Age					
Average	10 mos		11 yrs	9 mos	
Duration of symptoms prior to operation	64 yrs			47 yrs	
Average	15 4 yrs			14 4 yrs	14.9 yrs
Bone of origin and joint involved					
Femur—hip	4			1	5
Acetabulum—hip	3				3
Femur—knee	2		1	2	5
Tibia—knee	2			1	3
Ulna—elbow	1				1
Tibia and fibula—ankle	1				1
Treatment					
Joint incised and drained	5			2	7
Joint aspirated subsequent incision and drainage (8 hrs 21 days)	4			1	5
Joint and adjacent soft tissue abscess incised and drained	1		1	1	3
Joint aspirated and adjacent soft tissue abscess incised and drained	1				1
Joint aspirated (repeatedly)	1				1
Adjacent subperiosteal and subcortical abscesses and joint drained	1				1

occurred. Within the positive culture group a staphylococcus was found in five cases (45.4 per cent), a streptococcus in four cases (36.4 per cent), Bacillus pyocyaneus in one case (9.1 per cent), and a pneumococcus in one case (9.1 per cent)

It is realized that differentiation between a turbid effusion and gross pus when both are negative to cul-

8 Bisgard J D. The Relation of Pyogenic Arthritis to Osteomyelitis. Surg. Gynec. & Obst. 55: 74-80 (July) 1932

ture is largely a matter of opinion, but when purulent material is obtained on joint evacuation and subsequent roentgenograms reveal osteomyelitis adjacent to an epiphysis, which is in part at least intracapsular, the drainage of pus from the primary lesion into the joint cannot be denied regardless of cultural reports.

In group I, consisting of nineteen cases, no clinical or roentgenographic evidence of sequestration occurred. Within this group the adjacent joint was involved in

TABLE 8—*Bacteriology and Joint Culture in Adjacent Suppurative Arthritis*

	I	II Small Localized Seques- trums	III Extruded Seques- tration Surgically	IV Deaths (4 Joints 8 Cases)	Total (18 Joints 70 Cases)
15 Adjacent suppurative arthritis on admission (18 cases) mortality rate 22.2%	No Seques- tration (13 Joints 19 Cases)	Localized Seques- trums Spontane- ously (6 Cases)	Extruded Seques- tration Surgically (1 Joint 42 Cases)		
Bacteriology					
Growth blood and joint	2			1	3
No growth blood and joint	2			2	4
No growth blood or joint	4				4
No growth blood or joint growth bone	1				1
No growth blood growth joint and bone	1				1
Growth blood joint and bone			1	1	2
No record blood growth joint	1				1
No record blood no growth joint	1				1
No record blood no growth joint or bone	1				1
Joint culture					
No growth	7				7
Staphylococcus	2			1	3
Staphylococcus albus			1	1	2
Streptococcus haemolyticus	2				2
Streptococcus non haemolyticus	2				2
B. pyocyaneus				1	1
Pneumococcus				1	1

thirteen cases. On cultural comparison it was found that joint cultures remained sterile in 53.8 per cent, while bone cultures were sterile in 16.6 per cent.

Cofield⁹ noted the frequency of sterile joint cultures in septic arthritis. Cotton¹⁰ believes that joints are relatively tolerant to infection. Pearson¹¹ feels that the fluid in such joints is at first serous and sterile but will become purulent if neglected. Reich¹² states "If repeated aspiration and lavage are unsuccessful the condition is undoubtedly the result of an osteomyelitis." He attributes the frequent negative joint culture to some attenuating action occurring within the joint. Beckman¹³ observes that further extension within the bone is unlikely if an early metaphyseal lesion ruptures into a joint and that free drainage of the involved joint is the only operative procedure required.

It is felt that the involvement of joints from adjacent areas of bone infection aids mechanically in decompressing the bone, thereby decreasing bone destruction. It seems probable that such involved joints possess bactericidal properties the nature of which is unknown at present. Experimental work should here prove of value.

9 Cofield R. B. The Treatment of Septic Arthritis. Ohio State Med. J. 14: 149-151 (March) 1918.
10 Cotton F. J. Infections of Bones and Joints. Surg., Gynec. & Obst. 31: 254 (Sept.) 1920.
11 Pearson William. Acute Osteomyelitis. Irish J. M. Sc. May 1927 pp. 215-218.
12 Reich R. S. Purulent Arthritis. J. Bone & Joint Surg. 10: 554 578 (July) 1928.
13 Beckman Fernwick. Acute Hematogenous Osteomyelitis. Bull. New York Acad. Med. 6: 792-807 (Dec.) 1930.

In this series the female mortality exceeded the male by more than 50 per cent. A staphylococcus was recovered on blood culture, alone or in combination with Streptococcus haemolyticus, in 75 per cent of the cases within this group. Death occurred within one week of the onset in three fourths of the cases. Two of the cases were of the fulminating type, in which death apparently resulted from the overwhelming initial infection. In retrospect the wisdom of early drainage in these two cases is questioned. In four of the remaining cases, blood cultures were persistently positive and death resulted from general sepsis.

The mortality in the group with one or more positive blood cultures was 28.6 per cent. No intravenous medication other than repeated blood transfusion was given. This was done in the room or ward as part of the general policy of local and general rest. General treatment was otherwise symptomatic. Secondary abscesses were drained in the ward or room where fluctuation developed. The low mortality rate and the high percentage of positive blood cultures in this group resulted in constant checking of culture technique and comparison of culture reports with the clinical picture without discovery of gross error or discrepancy. In view of the fact that in nine cases only the admission culture was positive and subsequent cultures were repeatedly negative, and because of the average short duration of symptoms on admission, it is felt that many of these cultures were obtained during the phase of primary transient bacteremia. Early drainage precluded more than one preoperative blood culture. Of the twenty-one cases in which a positive blood culture was obtained on admission, all were treated by surgical drainage. Six patients died, while in the remaining fifteen cases subsequent negative cultures were obtained. In no case presenting a negative blood culture on admission was a positive blood culture obtained subsequent to operation.

CONCLUSIONS

- 1 In children under 2 years of age the clinical course of the disease varies widely from that of adults.
- 2 The American Negro appears to be relatively immune to the disease in this section.

TABLE 9—*Cultural Comparison of Groups With and Without Adjacent Suppurative Arthritis on Admission*

16 Group I No Sequestration (19 Cases)	With Joint Involvement (13 Cases)	Without Joint Involvement (6 Cases)
Ages	10 mos-64 yrs (av. 13.4 yrs)	6 wks-40 yrs (av. 16.1 yrs)
Duration of symptoms prior to drainage	20 hrs-22 days (av. 7.8 days)	22 hrs-8 days (av. 3.2 days)
Positive cultures	6	5
Days from onset to operation	2-7 days 17 days (av. 8.7 days)	22 hrs-5 days (av. 3.2 days)
Negative cultures	7	1
Days from onset to operation	20 hrs-22 days (av. 6.8 days)	2.5 days

3 Acute hematogenous osteomyelitis must be considered when pyrexia and localized pain on bone pressure coexist in the absence of an obvious cause.

4 The majority of the best results were obtained by drainage of the bone within one week following the onset. The mortality rate was also highest in cases in which drainage was instituted within this period.

5 The pathologic changes present, while usually directly proportionate to the duration of the symptom, are influenced by many other factors.

6 Acute, pyogenic, suppurative arthritis should be considered to be osteomyelitis of an adjacent bone until proved otherwise

7 Clinically, joints are more resistant to infection than bone and apparently possess marked bactericidal properties

546 McCallie Avenue

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago The impression that I gain from Dr. Robertson's paper is that it will be a very useful study in the tabulation of what every one hopes will be many series of similarly analyzed cases and in a few years, when a number of investigations from different localities and clinics have been made, orthopedic surgeons will be in a better position to judge in an individual case as to the treatment. Nothing can be done about the prevention. There are some points of interest, and one of them is the tenderness on local pressure not sudden and sharp but rather soft and continuous. A few months ago I saw a little girl in Chicago who complained of pain around her knee. Movement in the joint was unimpaired, but she had a fever of 102 and on deep pressure over the

the incidence in the Negro race, I would like to substantiate. For some reason, I do not know what osteomyelitis seems to be less frequent in the Negro, at least in Memphis, than among the white people.

DR. ROBERT L. PRESTON, New York I am interested in the 24 per cent of cases that were complicated by acute suppurative arthritis. For the past two years I have been studying the problem of experimental acute staphylococcal suppurative arthritis, in an attempt to find out what factors are responsible for the bad results that are so frequently seen. I feel that the facts brought out by an analysis of observations have a direct bearing on the problem of acute hematogenous osteomyelitis. In the course of this experimental work a measured amount of *Staphylococcus aureus*-haemolyticus was injected into the knee joint of rabbits. The typical acute suppurative arthritis picture developed: marked swelling with distention of the joint with pus, disorganization of the joint, erosion of the articular surfaces and spread of the infection into the surrounding bones and soft parts. In those cases in which treatment was delayed, there was a tendency for metastatic abscesses to develop in the lung, heart, liver and kidneys, and for metastatic bone and joint infections to appear. As injection of the knees of other animals continued with available strains

TABLE 10—Deaths in Group IV

17 Group IV, Deaths (8 Cases All White)* Apparent Cause of Death	Sex and Age	Bone and Complication	Duration of Symptoms	Operation	Bacteriology		Outcome Post operative
					Blood	Wound	
A General blood infection			5 days	Abscesses incised	Staph. albus		7 hrs
1 Condition critical on admission	♀ 8 yrs	Femur and radius distal ends soft tissue abscess					
	♂ 10 yrs	Femur distal subcortical abscess	56 hrs	Cortex drilled and windowed		Staph. aureus haemolyticus	8 hrs
2 Condition not critical on admission subsequent metastatic abscess formation	♂ 47 yrs	Tibia—proximal subcortical abscess suppurative arthritis of knee	14 days	Cortex drilled and windowed aspiration and incision	Staph. aureus and Strep. hemol. 2 times	Staph. aureus bone and joint once	9 days
	♀ 10 yrs	Tibia—proximal subcortical abscess	60 hrs	Cortex drilled and windowed	Staph. 5 times	Aureus 1 time	23 days
	♂ 8 yrs	Femur—neck suppurative arthritis of hip	4 days	Point aspirated and incised	Staph. 5 times	Albus 1 time	60 days
	♀ 12 yrs	Tibia—proximal and mandible soft tissue abscess leg	6 days	Abscess incised 2 teeth extracted	Staph. 2 times	Albus 1 time	78 days
B Meningitis	♀ 9 mos	Suppurative arthritis of hip	7 days	Aspiration 5 times at 3 day intervals incision 16th hospital day	No growth	and spinal fluid B pyocyanus	18 days
C Pneumonia	♂ 2 yrs	Suppurative arthritis of hip	14 days (following lobar pneumonia)	Joint aspirated and incised	No growth	Pneumococcus	15 days

* Mortality rate series 10.6 per cent (male 8.7 per cent female 13.8 per cent)

lateral condyle of the femur she winced. Although there was little evidence in the roentgenogram of any lesion an operation was advised and revealed a focus of osteomyelitis exactly like Dr. Robertson's first picture. That is one important point. Another point that interested me was his conclusion that extension of an osteomyelitis adjacent to a joint, into the joint, decompressed the original focus and made the patient's pain less. So far as I know, that is an original idea. I shouldn't advise as a method of treatment that in order to decompress an abscess one should bore a hole into the joint and into the abscess. But it is interesting because it shows that this young man has thought about his cases and has reasoned about them. Another point of interest was the low incidence of osteomyelitis in the Negro race. That I had not known before.

DR. JOSEPH I. MITCHELL, Memphis, Tenn. Dr. Robertson has presented proof of the value of early diagnosis and treatment in acute osteomyelitis. Early blood culture studies have been made and in a large proportion of his cases the cultures were positive. The inciting cause of osteomyelitis is bacteremia, in some cases this bacteremia persists or becomes septicemia. I think that is the explanation of the high mortality rate in this disease. When the bacteremia is transient subsequent blood culture is negative and the patient will, as a rule, recover. When septicemia ensues the patient stands a very good chance of losing his life. The largest percentage of the fatal cases occurs as Dr. Robertson said, within the first two weeks. The other point that he brought up, about

of *Staphylococcus aureus* there began to be an entirely different picture. With some of these strains the local joint damage was negligible but the animals died because of a marked toxic degeneration of the kidney, heart muscle and gastro-intestinal tract. In this type of infection, metastatic abscesses were never seen. Repeated inoculations of a large series of animals with either the toxic or the abscess strains of *Staphylococcus aureus* continued to produce definite, characteristic clinical pictures. It became evident that some strains of *Staphylococcus aureus* were involved which produced a markedly destructive and invasive lesion at the site of inoculation and had a tendency to produce metastatic abscesses, and other strains of *Staphylococcus aureus* which produced but little local damage at the site of inoculation and killed the animal by overwhelming toxemia. This toxic clinical picture is much like that produced by such exotoxin-producing organisms as *Bacillus diphtheriae*. This analogy is further substantiated by the fact that a virulent exotoxin could be isolated from these strains and could not be isolated from the abscess-producing type of *staphylococcus*. Since these two markedly different pictures characteristically result from infection with different strains of *Staphylococcus aureus*, it is evident that the therapeutic indications in staphylococcal infections must differ widely. These studies seem to indicate that the local and systemic damage following acute staphylococcal suppurative arthritis does not depend on whether or not joints are particularly resistant to infection or whether synovial fluid

has bactericidal properties. It seems to depend on whether the joint is infected with the toxic or abscess type of *Staphylococcus aureus*.

DR. JAMES B. WEAVER, Kansas City, Mo. It has long been known that the staphylococcus produces an exotoxin which is hemolytic and necrotizes tissue. It has been known for some time that adults have in their blood stream a certain amount of natural antitoxin to the staphylococcus. Children very rarely have any natural antitoxin. Patients suffering from deep staphylococcal infections have a large amount of antitoxin in the blood stream, as a rule. A method of measuring this antitoxin has been in use for several years. It is simple, much more simple than the Wassermann test and is carried out something after this manner: A rack of test tubes is set up in which there is 1 cc of washed rabbit cells used as an indicator. A definite amount of antitoxin and various dilutions of the patient's serum are placed in each tube. After sitting in the water bath for a while, it is removed to the refrigerator. When the toxin is in excess of the antitoxin in the patient's serum, hemolysis takes place, and the reading is made in the amount of dilution in the patient's serum. I don't know when a case of osteomyelitis is cured. These cases should be reported as five year cures, ten year cures and so on. Most of the deaths from acute osteomyelitis occur in the first ten days. It is my belief that these deaths are due to toxemia and not to bacteremia. Pathologic specimens in these cases show destruction of vital organs due to toxemia and not to destruction of vital organs but to bacterial invasion.

THE RÔLE OF ALCOHOL IN CIRRHOSIS OF THE LIVER

A CLINICAL AND PATHOLOGIC STUDY BASED ON
FOUR THOUSAND AUTOPSIES

RUSSELL S. BOLES, M.D.

AND

JEFFERSON H. CLARK, M.D.

Visiting Physician and Chief of Laboratories, respectively, Philadelphia General Hospital
PHILADELPHIA

Cirrhosis of the liver is a fairly common chronic disease, presenting in its later stages a well recognized clinical and pathologic picture. In its early stages, while the histologic aspects may be recognized with reasonable accuracy, the clinical diagnosis is seldom evident and frequently is based more on presumption than on fact.

Great diversity of opinion exists regarding the etiology of the disease, from both a clinical and an experimental point of view. In a general way it is believed to be the result of various toxic and infectious agents which cause a destruction of the liver cells and produce a proliferation of the connective tissue that ultimately leads to fibrosis of the organ.

For many years alcohol has been considered one of the commonest causes of cirrhosis of the liver so much so that the term "portal cirrhosis" is used almost synonymously with "alcoholic cirrhosis" and as such heads the list in most classifications of the disease. Other factors considered in the etiology are syphilis, tuberculosis, diabetes and such acute infections as measles, scarlet fever, typhoid and pneumonia. Such substances as copper, arsenic, lead and silver, bacterial toxins especially of intestinal origin, condiments such as chillies and spices and a deficiency of vitamins A, C and D and fats and proteins in the diet all, at one time or another, have been suspected of causing the disease.

Experimentally, it is generally accepted that alcohol alone will not produce cirrhosis of the liver. However, when administered in combination with other toxic substances, cirrhosis has been produced.

In recent years there has been growing an increasing tendency to dispute the status of alcohol in the development of cirrhosis. It was with this in mind, especially, that the present investigation was undertaken. We wished to determine the incidence of cirrhosis of the liver, based on histologic evidence, as it occurred in a large general hospital—the ratio of age, sex and race and, more especially, the relation borne to the disease by alcohol and the acute infections, and by syphilis, diabetes and tuberculosis. For this purpose 4,000 autopsies were studied. They were all performed during the period from March 1933 to July 1935. The period happened to cover approximately the first two years following the repeal of prohibition. Whether the fourteen year era of prohibition preceding this period, during which there presumably was less drinking of strong spirits, might be of influence in the facts presented, is debatable.

We recognize with others the inadequacy of the terms portal, biliary, fatty, and the like in classifying cirrhosis, and the desirability of a classification based on etiology. Considering the uncertain state of knowledge, however, concerning the etiology, the difficulties inherent in such a classification are obvious. While we do not presume to offer a new classification for the cirrhoses and will present our cases in accordance with the more familiar terminology, we believe that a more accurate and descriptive classification of the disease, based at least on our observations, would be as follows:

1 *Circulatory*—The result of prolonged failure of the circulatory system incident to advanced myocardial degeneration and leading to the so called red atrophy of the liver or cardiac cirrhosis.

2 *Degenerative*—The usual portal or atrophic type, which results from a degeneration or necrosis of liver cells, and proliferation of fibrous tissue and bile ducts, often accompanied by an extreme degree of fatty infiltration of the remainder of the liver parenchyma. This type is generally attributed to the effect of alcohol or other toxic agents.

3 *Infectious*—The result of a continuous low grade infection probably brought to the liver from some portion of the gastro-intestinal tract or possibly from the spleen. It exhibits in the periportal spaces increased fibrous tissue, which is sparsely or densely infiltrated with lymphocytes and plasmocytes in particular. Bile duct proliferation is not so marked.

4 *Obstructive*—Characterized by bile stasis, increased fibrous tissue and bile duct proliferation, the latter often extreme and the result of obstruction to bile flow (gallstone compression from cancer cells, primary and metastatic, and so on).

5 *Pigment*—The deposition of abnormal pigment as carbon, hemosiderin or hemofuscin, which produces by mechanical irritation essentially the same histologic picture that is seen in the obstructive types.

To satisfy the purpose of our study cases were grouped as follows: 1. All those regardless of the history that presented definite or questionable histologic evidence of cirrhosis, the latter being subgrouped. 2. All cases in which the clinical history stated that the patient was addicted to alcohol. 3. Cases in which the liver weighed more than 2,000 Gm., excepting those in which the liver was enlarged as a result of leukemia, amyloid disease, carcinoma or other conditions not concerned with this study.

In the first group which showed histologic evidence of cirrhosis of various types, there were 243 cases. The incidence in the 4,000 autopsies of slightly more than

From the Medical and Pathological departments of the Philadelphia General Hospital.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

6 per cent Mallory¹ noted in a study of more than 8,000 autopsies covering a period of thirty-three years an incidence of 5.89 per cent. In the first table it will be noted that the majority were white males. It is significant that in this general group only eighty-four, or 35 per cent, gave a definite history of alcoholism, while in 159, or 65 per cent, there was no such history. It should be stated here that, of the 243 cases of cirrhosis, only two were observed in children.

It will be noted in table 2 that 150, or 62 per cent, of the cases, comprising the majority, as would be expected, were of the so-called portal type. We do not refer to this as alcoholic cirrhosis, which would be in agreement with most clinical classifications, as 105, or 70 per cent, of these cases did not present any history of alcoholism.

We would suggest the term degenerative instead of portal or alcoholic, as more descriptive of this type of cirrhosis. It is characterized by degeneration or necrosis of the liver cells with proliferation of fibrous tissue and bile ducts, accompanied by an extreme degree of fatty infiltration of the remainder of the liver parenchyma.

Under the fatty group we placed thirty-four cases. An extreme degree of fatty metamorphosis, which is a common finding in so-called alcoholic cirrhosis, was noted in these cases. Although it was unaccompanied by a definite bile duct proliferation or fibrosis, the picture suggested a beginning cirrhosis. Of this group, twenty-six, or 80 per cent, had an alcoholic history.

The third most frequent type was cardiac cirrhosis, of which there were thirty-three cases, or 14 per cent of the total, a sharp drop in the incidence, compared to portal cirrhosis. Twenty-eight, or 85 per cent of these thirty-three cases were nonalcoholic. We believe that a more appropriate term for this type of cirrhosis would be "circulatory." The typical histologic picture is that of so-called red atrophy, the result of prolonged failure of the circulatory system incident to advanced myocardial degeneration.

TABLE 1—History of Alcoholism

Consecutive autopsies analyzed	4 000
Total number cases of cirrhosis	243 or 6%
Alcoholic	84 (34%)
Male	66
White	57
Black	9
Female	18
White	16
Black	2
Nonalcoholic	159 (66%)
Male	87
White	63
Black	24
Female	72
White	51
Black	21

The next commonest variety was an infectious type of cirrhosis, of which there were eighteen instances, or 7 per cent. These cases exhibited in the periportal spaces increased fibrous tissue sparsely or densely infiltrated with lymphocytes and plasmocytes in particular. Bile duct proliferation was not so marked in this group. The picture strongly suggested an infectious etiology.

Biliary cirrhosis was observed in only eight cases, or 3 per cent of the total, and these were equally divided among the alcoholic and the nonalcoholic.

It is of interest to note that no case of pigment cirrhosis was observed in the 4,000 autopsies. While

hemosiderin was seen not infrequently in the sections, it was not in sufficient amounts to be of significance and we do not believe that such cases justly can be regarded as pigment cirrhosis. The true type of pigment cirrhosis, hemochromatosis, likewise was not observed, indicating its comparative rarity.

It is apparent in table 3, from a study of the age distribution in the cases studied, that cirrhosis in its fully developed form is a disease of advanced years, the largest number of cases having been observed in the sixth and seventh decades. A striking number for the age were seen in individuals between 20 and 50

TABLE 2—Ratio of Alcoholism to Types of Cirrhosis (243 Cases)

Type	Alcoholic	Nonalcoholic	Total	Per Cent
Portal Degenerative	45	105	150	62
Fatty metamorphosis	28	8	34	14
Cardiac (circulatory)	5	28	33	14
Infectious	4	14	18	7
Biliary (obstructive)	4	4	8	3
	84	159	243	

years of age. It is significant that the majority of these individuals were young white men addicted to alcohol, which is the reverse of what was encountered in the older decades. It may be that the incidence of cirrhosis in the alcoholic declines in the older age groups because such individuals do not live long enough to develop cirrhosis.

In order to establish further the relation of alcohol to cirrhosis, we selected from the 4,000 autopsies reviewed all cases in which alcoholism was mentioned in the history, as shown in table 4, of these there were 228 instances. Of these fifty-eight, or 24 per cent, showed definite cirrhosis. If we included in this group the twenty-six fatty cases showing an intense fatty infiltration or metamorphosis which is usually suspected to result from alcohol, there still would be an incidence of only 37 per cent in the alcoholic group. On the other hand, there were 144, or 63 per cent of the alcoholic group, without any evidence whatever of cirrhosis.

Still further to determine the role played by alcohol, we selected the third group, or those in which the liver weighed over 2,000 Gm, with the exceptions previously mentioned, as large, fatty livers, obviously not the result of some terminal infection, are frequently referred to as alcoholic. Of these there were 151 cases, seventy-five of which were alcoholic and seventy-six nonalcoholic. Of the alcoholic, twenty-seven, or 40 per cent, had portal cirrhosis. Eight additional cases were fatty. Of the nonalcoholic, twenty-seven or 39 per cent, had portal cirrhosis, with six additional cases fatty.

Ascites is regarded as a fairly frequent complication of cirrhosis, especially of the portal type. It was observed in our series in 35 per cent of portal, in 36 per cent of cardiac and in 50 per cent of the biliary group of cirrhoses. In the portal and cardiac types it was seen largely in the nonalcoholic, while in the biliary group it was evenly divided.

Jaundice was noted in 30 per cent of the portal, 18 per cent of the cardiac and 62 per cent of the biliary group. In the cases of portal cirrhosis, jaundice was noted in an equal number of the alcoholic and the non-alcoholic. In the cardiac and biliary cases it was observed more frequently in the nonalcoholic.

Ascites and jaundice were associated in 17 per cent of the portal, in 6 per cent of the cardiac and in 37 per

¹ Mallory F. B. *Cyclopaedia of Medicine* Philadelphia F. A. Davis Company 8 166 1935

cent of the biliary cases. Except in the biliary group, their association was slightly higher in the nonalcoholic

Since the acute infectious diseases, such as measles, pneumonia and typhoid, are occasionally mentioned as a cause of cirrhosis, it is of interest that only seventy-six of the 243 cases of cirrhosis, or slightly more than 31 per cent, gave a history of such infections. The greater number of these were in the nonalcoholic group. It did not appear from an analysis of these cases that the acute infections played an important part in the etiology of cirrhosis.

Active pulmonary tuberculosis was found in twenty-three, or 9 per cent, of the 243 cases of cirrhosis. In eighteen of these the cirrhosis was of the portal type, ten of which were in the alcoholic and eight in the nonalcoholic. Considering therefore that 220 out of 243 cases of cirrhosis showed no evidence of active tuberculosis, it would appear that this disease is not an etiologic factor.

Syphilis was present in twenty-eight or 11 per cent, of the 243 cases of cirrhosis. It was associated with the portal type of cirrhosis in fourteen, ten of which were in the nonalcoholic and four in the alcoholic. In the remaining fourteen the cirrhosis was of varying types. Since 215 out of 243 cases of cirrhosis were observed in individuals with no evidence of syphilis, we cannot believe that this disease is of importance in the etiology.

Diabetes was associated with cirrhosis in thirteen of the 243 cases. In eight the cirrhosis was of the portal type, one being alcoholic and seven nonalcoholic. The association of these two diseases was so unusual that it did not seem to carry any significance.

The presence or absence of such gross lesions in the digestive tract as ulcer, carcinoma and gallbladder disease was noted in all the cases of cirrhosis. These

It is generally conceded that the cirrhosis attributable to alcohol is of the portal type, but it must be remembered that the same lesion occurs in children and other nonalcoholic persons as well as in certain animals. Furthermore, the incidence of cirrhosis is not in proportion to the amount of alcohol consumed in certain countries, and in some classes, such as the Hindu, who consume little if any alcohol, cirrhosis is relatively frequent.² A majority of drunkards do not have portal cirrhosis, as proved at autopsy, according to our obser-

TABLE 5—Cases (151) in Which Livers Weighed 2,000 Gr or Over

	Alcoholic	Nonalcoholic
Cirrhosis	30	51
Portal	27	4
Biliary	2	1
Cardiac	1	1
Fatty metamorphosis	8	6
No cirrhosis	87	29
Totals	117	80

vations and those of others.³ Finally, then, as regards the rôle of alcohol, which was the primary purpose of this analysis, it is quite evident from our observation that, contrary to prevailing opinion, alcohol cannot seriously be regarded as a specific cause of cirrhosis of the liver.

SUMMARY

From an analysis of 4,000 consecutive autopsies performed at the Philadelphia General Hospital during the period from March 1933 to July 1935 it is concluded that diabetes, syphilis, pulmonary tuberculosis and the acute infectious diseases, as well as such gross lesions in the digestive tract as ulcer, carcinoma and gallbladder disease, do not bear any relation to the incidence of cirrhosis. It is further concluded that alcohol can not be regarded as a specific factor in the etiology of cirrhosis. As the lesion defined as portal cirrhosis occurs under influences unassociated with alcohol we would suggest abandonment of the term "alcoholic cirrhosis."

Rittenhouse Plaza

ABSTRACT OF DISCUSSION

DR. LEONARD G. ROWNTREE, Philadelphia: I have been interested in this study of Drs. Boles and Clark, particularly in their suggestion as to reclassification of liver disease. In all forms of chronic disease, many attempts are passed through before final classification is attained. Classification eventually leads to clarity. Relative to the rôle of alcohol in the pathogenesis of cirrhosis of the liver I will discuss three groups of statistics. The first gives the incidence of both diseases from 1910 to 1932 inclusive, as revealed in the mortality statistics for the registration area of the United States. It is apparent that with the advent of prohibition the incidence of cirrhosis of the liver in this country dropped 50 per cent. The patients studied in the authors' series came at a period immediately before and after the repeal of the Eighteenth Amendment. It represents, therefore, a transition period. The second group contrasts the incidence of liver cirrhosis and alcoholism in urban and rural districts. New York State is essentially urban and Kansas rural and in addition Kansas had state prohibition prior to 1917. In New York State the incidence of cirrhosis following prohibition dropped to about one third of its former level whereas in Kansas the incidence of both alcoholism and cirrhosis is relatively unaffected. In the Co-

TABLE 3—Age Distribution in Cirrhosis (243 Cases)

	Alcoholic	Nonalcoholic	Total
0-9	0	2	2
10-19	0	2	2
20-29	6	4	10
30-39	16	11	27
40-49	20	18	38
50-59	16	40	56
60-69	18	47	65
70-79	8	29	37
80-89	0	6	6
Totals	84	159	243

TABLE 4—Condition Found in Cases of Alcoholism

	Total cases of alcoholism
Definite cirrhosis	58 24%
Fatty metamorphosis	26 13%
No cirrhosis	144 63%

lesions occurred so infrequently that it was quite obvious that they bore no relation to the condition.

From the foregoing analysis it would appear very doubtful that diabetes, syphilis, tuberculosis, the acute infectious diseases or common gross lesions in the digestive tract are of importance in the etiology of cirrhosis. Whatever their influence might be it is greater in the nonalcoholic group. It is interesting to note in this connection that the ratio of these conditions in the nonalcoholic to the alcoholic is almost 2:1 which is approximately the same ratio of alcoholism observed in the total number of cirrhotics.

² Rolleston, Humphrey and McVee. *J. W. D.* as a cause of the bladder and bile ducts. *Lancet*, London, Macmillan Co., 1934, p. 216. ³ Tirumuru, T. S., and Radhakrishna Rao. *M. A. J.* 1: 1-11 (Feb. 22, 1934). ⁴ Radhakrishna Rao. *M. A. J.* 1: 1-11 (Oct. 10, 1933). ⁵ Formad, H. F. *Tr. A. Am. Physicians*, 1: 225 (1935).

County Hospital, following prohibition, the incidence dropped from 600 a year to from 100 to 200 annually. In Montreal, in what might be considered a favorite "wet area" during prohibition, the incidence of cirrhosis increased. In the Mayo Clinic the incidence of cirrhosis is relatively unaffected by prohibition. The question discussed by the authors is one of paramount importance. A study from the Philadelphia Hospital comparable in character, but covering a period from 1920 to 1923, might reveal contrasts of considerable interest. In all studies involving alcoholism and cirrhosis of the liver there should be sounded one word of caution, i. e., the patient's word is not always trustworthy, and hence other forms of evidence, if available, are desirable. Judging from the statistics available, alcohol in this country is responsible for approximately 50 per cent of the cases of cirrhosis of the liver.

DR. HENRY L. BOCKUS, Philadelphia. In 1685 Browne stated that hardening of the liver in association with ascites was probably due to the drinking of too much water. Paine stated in 1889 that this was a "fault which the bold spirits of the time were much on their guard against." In 1793 Baile mentioned alcoholism as a factor in the production of cirrhosis and since that time it has come down to us. Chronic fibrosis of the liver must depend on many factors on where one lives and how. In the Fijian Islands cirrhosis is attributed to a mytilotoxin from mussels and in Egypt to bilharziasis. The excessive ingestion of spices, such as ginger and cardamom may account for cirrhosis among the nonalcoholic Hindus. Among coal miners it has been attributed to anthracosis and among stone masons to silicosis. Arsenic, manganese, copper, aluminum, chloroform, naphthol and phosphorus have all been mentioned as possible causes. Many feel that the amount of the toxin and rapidity with which it acts determine the character of liver damage—whether a massive hepatocellular change or a chronic fibrosing inflammation. The authors have mentioned that gastroduodenitis may be a primary factor aided and abetted by alcohol. Mallory has described cases of cirrhosis attributed to a streptococcus and to a colon bacillus. Syphilis and primary splenomegalic disorders such as Banti's disease, Gaucher's disease and chronic malaria, must account for some cases. Mention should be made also of conditions predisposing to liver injury as lowering of the glycogen reserve due to dietary deficiency or increased metabolism as well as to anoxemia. The authors have mentioned a new classification for cirrhosis: circulatory, degenerative, infectious and obstructive. Possibly this might be further reduced to three types by combining the degenerative and infectious in one group under the term toxic-infectious. The classification would then be an etiologic one: (1) circulatory, (2) toxic-infectious, (3) obstructive. The latter concept of cirrhosis favors clear thinking in that it discourages the consideration of cirrhotoses as a distinct clinical and pathologic entity dependent on any one cause. Physicians should be on the alert for the many etiologic factors that may be responsible for hepatic fibrosis.

DR. RUSSELL S. BOLES, Philadelphia. I certainly do not want to give any impression of condoning the use of alcohol. I should like to know whether Dr. Rowntree's statistics were vital statistics, based on clinical diagnoses. I would draw attention to the fact that our conclusions were reached solely on the basis of histologic evidence. We are not trying to draw conclusions as to etiology or trying to explain our observations in any way. We simply present what we have found. If Dr. Rowntree's curves are plotted on a basis of vital statistics in turn based on clinical diagnoses throughout the country at large I think they are open to a question as to their accuracy. It is surprising how frequently the clinical diagnosis of portal cirrhosis is wrong. It is an easy clinical diagnosis to make, but is often a difficult pathologic diagnosis to prove when it has been made clinically. The clientele of some clinics is of course, quite different from that which we get at old Blockley. When they say there that they drink, they mean a quart or 2 or 3 quarts a day. Furthermore drunkards are notoriously inaccurate when they say they drink but little. If alcohol is a factor in producing cirrhosis, a greater incidence during the years of prohibition ought to be found because, if cirrhosis is produced by alcohol, it probably takes a number of years to bring it about, and therefore the drinking that was done prior to pro-

hibition would obviously show its effects during prohibition and result in a higher incidence. Dr. Bockus's remarks are interesting and well taken. We separate the infectious type from the degenerative because histologically they each present a characteristic picture. I trust that our conclusions will not carry assurance to any one that he is less likely to get cirrhosis if he does drink than if he doesn't drink. From our analysis of the age incidence, it would appear rather conclusive that if drinking has anything to do with cirrhosis it is the drinking done in the more tender years that carries the greater hazard than that done in later years.

LUPUS ERYTHEMATOSUS

A MODIFICATION OF THERAPY WITH GOLD COMPOUNDS

HERBERT S. ALDEN, M.D.

AND

JACK W. JONES, M.D.

ATLANTA, GA.

The alchemists dreamed of a "pure essence of gold" hidden under its divers veils of dross and by a leap of logic hard for present-day minds to follow, reasoned that, if large doses of this dross free element were consumed, all man's ills would be purged away. Curiously enough eight centuries later the medical profession finds itself hovering closely on the edge of the same dream. Moellgaard¹ dreamed of patients rid of pulmonary tuberculosis by a few injections of gold into the circulating blood. Many others saw and dreamed of a spectacular cure of lupus. And now it is in some quarters used enthusiastically for arthritis and asthma.²

While it is well established that certain gold salts may be given intravenously in lupus erythematosus, sometimes with spectacular success, the profession must remain acutely conscious that such treatment has many limitations and is often attended with much danger. The repeatedly reported clinical "cures" and symptomatic relief are clearly supported by the experience of many of us, but there is in the air evidence of an enthusiasm too early divorced from caution. One has but to pass an eye down the column headed "gold" in the *Quarterly Cumulative Index Medicus* to note the frequent occurrence of serious accidents following its use as well as the multitude of disorders for which its use is recommended.

The use of gold salts in pulmonary tuberculosis came about originally as the result of Koch's discovery that gold produced a bactericidal action on the tubercle bacillus in vitro. Moellgaard¹ believed that it prevented experimental tuberculosis in rabbits and calves and would cure pulmonary tuberculosis in man. But when it was used in man it was often followed by disastrous results. These disastrous results were attributed to the death and liberation of large numbers of tubercle bacilli but are now known to be the result of the death of tissue from the gold salts. Large doses were given in an effort to produce a theoretical sterilization which in fact did not exist. In spite of disasters, however, many still hold that the gold salts possess much useful-

From the Department of Dermatology, Emory University School of Medicine.

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¹ Moellgaard, H. The Sanoerysin Treatment of Tuberculosis. Brit. M. J. 1: 643 (April 4) 1925.

² Gold Therapy in Arthritis, editorial. J. A. M. A. 105: 2163 (Dec. 28) 1935.

ness in certain forms of pulmonary tuberculosis but its specificity for the tubercle bacillus is no longer held.³

It was a short jump from the use of gold in pulmonary tuberculosis to its use in tuberculosis of the skin and thence to lupus erythematosus, on the mistaken notion of its tuberculous etiology, and so its dermatologic usefulness has roughly paralleled its history with pulmonary tuberculosis. It is now more or less generally believed that the gold compounds cause stimulation of all cells entering into the formation of chronic inflammation and into the process of healing,³ hence there is some reason for its apparent value in chronic arthritis and asthma.

All reports agree on the toxicity of the gold compounds.⁴ Experimental work shows that gold even in high dilutions, like arsenic, is a capillary poison, seemingly having a selective action on the contractile elements of the vessel wall. Following the intravenous injection in the experimental animal there is a sudden dilatation of capillaries, the capillary bed being increased fourfold, hemorrhage and slowing of the blood stream occur, and the animal is "bled" to death in its own capillaries. When gold is given more slowly, in smaller or more dilute doses, capillary reaction also occurs, but much of the element is retained and distributed in the connective tissue bed surrounding the capillaries notably in connection with the histiocytes, and there it can be demonstrated by spectrometric tests.⁶ Some of the elementary gold apparently escapes with the histiocytes through the mucous membranes of the lung, the gastrointestinal tract and the kidneys. It therefore may be readily seen how a sudden suffusion of the body with large doses of gold may lead to severe and even fatal results. One may also read in such observations a theoretical explanation for the action of gold in a chronic inflammation such as lupus erythematosus.

All reports likewise agree on the value of gold in the alleviation of lupus erythematosus, the earlier reports showing relatively much more enthusiasm.⁴ The more recent observations seem to be in favor of extreme care in reporting complete cures. We have all observed clinically the rapid dissolution of inflammation and edema in a small patch of relatively early lupus erythematosus after a few injections of gold as often as we have observed the slow reaction to such treatment in the old and scarred lesion. Experimentally, gold produces varying degrees of inflammatory reaction, depending on its concentration and location, and factors such

as capillary dilatation, inflammation or injury to tissue seem to favor its deposition in larger quantities.⁶ It would seem that there is at hand a drug which may produce a varying degree of counterirritation in some what the same manner as the application of heat, except that it is more continuous in its action—but with heat one can readily and immediately remove the counter irritant, whereas with gold the remedy is often irrevocable.

Driver and Weller⁷ and recently Wright⁸ have quite clearly demonstrated a high percentage of accidents following the use of gold compounds, the latter reporting a 25 per cent reaction in all cases that he had treated intravenously. The reactions observed by others have been as a whole in excess of this. Cole⁹ went so far as to doubt whether the values of gold compounds outweighed their dangers. While undoubtedly the fatalities and reactions reported may be in part due to overdosage, injudicious use or individual sensitivity the gold salts are nevertheless often administered by those uninformed of their dangers. It would seem wise therefore, to consider favorably a useful method of giving gold which is as near fool proof as possible, yet containing much of its efficacious qualities. Both the manufacturers of gold compounds and the clinicians using these preparations have attempted to devise formulas that will prevent accidents—witness the long list of gold compounds in use today. Monash and Traub¹⁰ have suggested that the gold compounds should be given intracutaneously directly into the diseased tissue—a method somewhat uncomfortable but provocative of good results. Traub¹¹ later reports that the same result may be obtained with other metallic substances.

The majority of the gold compounds in use have been marketed in the form of a crystalline powder with instructions to give immediately after they have been dissolved in distilled water thus preventing reaction due to oxidation of the solution. In recent years an American manufacturer has marketed gold and sodium thiosulfate, $\text{Na}_2\text{Au}(\text{S}_2\text{O}_3)_2 \cdot 2\text{H}_2\text{O}$, in a stable buffered aqueous solution instead of as a crystalline powder. Such a solution ready for immediate use eliminates many possible chances of error, such as contamination use of poorly distilled water, and the occurrence of oxidation products. In a small clinic or in the office where time and assistance may be at a premium, such a preparation is of considerable value.

Since the fall of 1931 we have treated fifteen patients having lupus erythematosus with this prepared stable solution of gold and sodium thiosulfate, given hypodermically instead of intravenously as usually given.¹ Twelve of these cases we have been able to follow and determine the results of treatment. Four of the twelve we can record as arrested at the present writing. We use the term "arrested" rather than "cure," since our experience with the use of gold salts in lupus erythematosus has been that the determination of "cures" is difficult if not doubtful. All these patients have improved while undergoing treatment. With the exception of one, all the patients had one or more recurrences in areas apparently healed or in new areas. In only

3 Henrichsen K. J. and Sweeney H. C. Sanocrysin Treatment in Tuberculosis. *Am. Rev. Tuberc.* 28: 1 (Oct. supp.) 1933. MacCormac, H. Two Cases of Lupus Erythematosus Treated by Stovarsol. *Proc. Roy. Soc. Med.* 28: 107 (Dec.) 1934.

4 These include Schamberg J. F. and Wright C. S. The Use of Gold and Sodium Thiosulfate in the Treatment of Lupus Erythematosus. *Arch. Dermat. & Syph.* 15: 119 (Feb.) 1927.

Whitehouse H. H. and Bechet, P. E. Lupus Erythematosus. *Lupus Vulgaris Tuberculosis and Tuberculosis of the Skin. Treatment with Gold Compounds.* ibid. 16: 563 (Nov.) 1927.

Roxburgh A. C. and Corsi H. The Therapeutic Value of Gold Compounds. *Brit. J. Dermat.* 42: 382 (Aug. Sept.) 1930.

Strandberg J. Six Years Experience in the Treatment of Lupus Erythematosus with Gold Compounds. *Acta med. Scandinav.* 75: 296 1931.

Rutledge W. L. Lupus Erythematosus. *Arch. Dermat. & Syph.* 23: 874 (May) 1931.

Towle H. P. The Present Status of Gold Therapy. *New England J. Med.* 204: 487 (March 5) 1931.

Throne Binford, Kingsbury Jerome and Myers C. N. Unusual Clinical Manifestations Following Intravenous Administrations of Gold Compounds. *Arch. Dermat. & Syph.* 25: 494 (March) 1932.

Throne Binford Clark, A. S. Van Dyck L. S. and Myers C. N. Treatment of Lupus Erythematosus with Gold Compounds. *New York State J. Med.* 27: 1064 (Oct. 1) 1927.

Nivers C. N., Hooper C. W. and Throne Binford. Gold Preparations in Therapy. *Proc. Soc. Exper. Biol. & Med.* 24: 749 (May) 1927.

Discussion on the Therapeutic Value of Gold Compounds. *Proc. Roy. Soc. Med. (Sect. Dermat. & Med.)* 23: 1383 (July) 1930.

5 Krogh August. The Anatomy and Physiology of Capillaries. New Haven, Conn. Yale University Press, 1929. p. 194.

6 Gaul L. E. and Staud, A. H. Quantitative Distribution of Gold in the Body. *Arch. Dermat. & Syph.* 32: 768 (Nov.) 1933.

7 Driver J. R. and Weller J. N. Untoward Results from the Use of Gold Compounds. *Arch. Dermat. & Syph.* 23: 87 (Jan.) 1931.

8 Wright C. S. Ten Years Experience in the Treatment of Lupus Erythematosus with Gold Compounds. *Arch. Dermat. & Syph.* 33: 413 (March) 1936.

9 Cole H. N. in discussion on Wright.⁸ Monash Samuel and Traub E. F. Modification of Therapy with Gold Compounds in Lupus Erythematosus. *Arch. Dermat. & Syph.* 21: 110 (July) 1931.

11 Traub E. F. in discussion on Wright.⁸ Jones J. W. and Alden H. S. Modification of Therapy with Gold Compounds in Lupus Erythematosus. *Arch. Dermat. & Syph.* 25: 544 (Oct.) 1933.

one instance can we record any evidence of reaction to the drug given subcutaneously and that, focal in character, was in a patient known to be sensitive to gold preparations. Previous to the use of this method we had treated three cases of lupus erythematosus by the intravenous route with triphal (sodium salt of aurothiobenzimidazole-carboxylic acid) and one with gold and sodium thiosulfate. In two of these cases general reactions developed, one severely with dissemination of the disease, so we had a healthy respect for the dangers of gold salts intravenously and welcomed this innovation.

The drug at first was marketed in ampules containing 25 mg of gold and sodium thiosulfate dissolved in 25 cc of water. The contents of the ampule were given subcutaneously in the upper arm at intervals of one week. Any larger quantity of solution seemed to produce considerable pain. Owing to an increase in the number of patients applying for treatment and the limited supply of the drug, we later had to reduce the weekly dosage to 125 mg and found that the results in most instances were just about as good. The improvement in the eruption was not as rapid as in some instances in which gold was given intravenously,

Summary of Twelve Cases Treated with Gold and Sodium Thiosulfate

Case	Age	Sex	Color	Duration of Eruption	Type of Eruption	Type of Treatment	Total Mg Gold	Comment
1	38	F	Negro	4 yrs progressive	Bat wing chronic discoid	Gold and sodium thiosulfate subcutaneously once weekly	675	Improved slowly under both types of treatment after one year had slight recurrence stopped treatment
2	25	F	Negro	1 yr	Cheeks discoid	Gold and sodium thiosulfate subcutaneously once weekly	975	After 16 injections 25 mg each clear recurrence 1 mo 19 injections 25 mg clear followed by second recurrence stopped treatment
3	11	F	Negro	1½ yrs	Cheeks nose tips of fingers discoid	Gold and sodium thiosulfate	925	Fingers clear after 1 st injections 25 mg face improved after 15 injections recurrence after 1 yr rest 9 more injections little improvement stopped treatment
4	24	F	Negro	6 mos	Tip of nose, upper lip discoid	Gold and sodium thiosulfate subcutaneously	550	After 8 injections 25 mg each clear recurrence upper lip in 5 mos 11 injections improvement after 8 injections triweekly 10 mg each marked improvement
5	12	F	White	1 yr	Tip of nose discoid	Gold and sodium thiosulfate weekly and triweekly	650	Well after 9 injections 25 mg each recurrence 8 mos 10 mg every other day
6	45	F	White	4 mos	Cheeks and tip of nose discoid	Gold and sodium thiosulfate tri weekly	170	Continued improvement regular treatment 17 injections well
7	40	M	White	3½ yrs	Cheeks discoid	Gold and sodium thiosulfate bi weekly	170	Treatment regular biweekly marked improvement pulmonary tuberculosis healed
8	42	F	White	5 yrs	Recurrent in summer, disseminated erythematous areas legs feet body	Gold and sodium thiosulfate tri weekly	200	Treatment continued improvement acute return followed x ray treatment of ulcer quickly subsided Well tuberculous ulcer surgically removed
9	27	F	White	6 mos	Discoid type temple	Triphal intravenously gold and sodium thiosulfate subcutaneously weekly triweekly and daily	2 600	Improved much on triphal intravenously 1929 remained so 2 yrs after 30 injections gold and sodium thiosulfate 25 mg each intravenously and 31 subcutaneously improved 3 years later recurrence upper lip 16 subcutaneous injections weekly no improvement under treatment weekly injections 10 mg each subcutaneously improved
10	65	M	White	6 mos	Superficial erythematous type ears and cheeks	Gold and sodium thiosulfate subcutaneously weekly	1 600	Improved gradually over period of 1½ yrs fairly regular treatment at present 1½ clear of trouble
11	45	M	White	20 yrs	Diffuse discoid type	Gold and sodium thiosulfate intravenously and subcutaneously	?	Unimproved under intravenous treatment and had reaction no improvement subcutaneous injections gold and had mild focal reaction
12	14	F	Negro	6 yrs	Small discoid base of nose	Gold and sodium thiosulfate subcutaneously once weekly	372	Thirteen regular weekly injections well recurrence 2 mos later 3 injections well remained so for 1½ yrs

METHOD OF TREATMENT

The method of giving gold and sodium thiosulfate subcutaneously came about purely by accident and by the fortuitous collusion of circumstances. In a small dermatologic clinic, lack of time and assistance made it difficult to dissolve the gold salts and give them intravenously. After we had obtained a small quantity of the aqueous solution of gold and sodium thiosulfate from the manufacturers we administered several doses by the intracutaneous method advocated by Monash and Traub.¹⁰ On observation that there was considerable improvement in the areas of lupus erythematosus that were not treated a single subcutaneous injection was given in the upper arm, with surprisingly little pain and discomfort and after several doses with much improvement. It was obvious that if this method could be used treatment would be much simplified and could be given with ease by a nurse or untrained assistant

but it had its compensations in safety and simplicity. After two years of experience in six cases of lupus erythematosus we had observed no local or general reactions with this method and no induration, pain or discoloration at the site of injection and we began to give doses of 10 mg (1 cc of solution) subcutaneously every other day and in some instances daily. This method brought about a more rapid improvement in the disease in most instances so much so that two patients asked specifically for more frequent doses. This manner of treatment was facilitated by the marketing of the gold solution in rubber-stoppered ampules containing 5 cc of solution (50 mg) from which small quantities might be taken without fear of contamination of the remaining stock. Our best results have been obtained in those patients who were able to get 10 mg of gold and sodium thiosulfate subcutaneously regularly three times a week.

Of the twelve cases that we were able to follow and observe, five occurred in Negroes, curiously all women. The disease in all instances was of the chronic, slowly progressive, discoid type, leaving much destruction in its wake (enhanced by the tendency toward depigmentation). As a whole the results of treatment in the Negro were neither as rapid nor as satisfactory as in the white patients, owing much to their disinterest and irregularity and frequent discontinuance of treatment, so we can record but one arrested case among them.

We were able to follow up more or less accurately all twelve of our cases, as shown in the accompanying table. Four of these cases, 33⅓ per cent, can be considered at the present writing as arrested. Six patients, or 50 per cent, have had a marked improvement in their eruption, and in two the eruption has remained stationary after an initial improvement. All but two of the patients had at some time a recurrence of the disease either at the original site or in a new area. Two of the cases occurred in children, both of whom tolerated the drug well and improved quite rapidly, but recurrences were frequent. One of our cases was of the superficial disseminate type, in which acute dissemination had occurred following exposure to sunlight. The patient had no untoward reaction to gold treatment but did have a twenty-four hour flare up following roentgen irradiation to a tuberculous ulcer. The eruption has been arrested for some months. In no instance could we consider this method of treatment as provocative of any general reaction, and in only one instance was there any focal reaction and that in an individual known to be sensitive to gold preparations.

REPORT OF CASES

CASE 6—A white American housewife, aged 45, asked for relief of an atrophic erythematous eruption the size of a quarter dollar (24 mm) on each side of the bridge of the nose extending to the lower lids, and a single small patch on the tip of the nose. All areas had been spreading since their appearance four months before. A diagnosis of lupus erythematosus was made and she was given 10 mg (1 cc of solution) of gold and sodium thiosulfate subcutaneously every other day for thirteen successive doses. After the third injection there was slight itching of the affected areas. After the fifth injection, marked improvement was noted. After the thirteenth injection the original lesions were hardly apparent. She was then given four additional injections at weekly intervals. Her skin has remained clear for six months. Total treatment lasted two months and she received a total of 170 mg of gold and sodium thiosulfate.

This case exhibited a rather marked and rapid improvement. Much of this improvement must be ascribed to early diagnosis and to regularity and frequency of treatment.

CASE 3—A Negro school girl, aged 11 years, came for relief of a slowly spreading scarring eruption on the cheeks, nose and tips of the fingers, which had been present for eighteen months. A diagnosis of lupus erythematosus was made and she was given 25 mg of gold and sodium thiosulfate (25 cc. of solution) subcutaneously in the upper arm at irregular weekly intervals. After thirteen injections the eruption on the fingers had cleared and the areas on the face had partially improved. Fifteen more injections at more irregular intervals resulted in slight improvement in the face. She returned one year after the last injection with a definite increase in the area of eruption on the face but no recurrence on the fingers and she received nine more injections with little or no improvement, and she stopped treatment.

The patient refused to take treatments three times a week, and even all attempts to get her to take regular

weekly treatments failed. This fact and the length of time she had the eruption account to some extent for her lack of improvement.

CASE 9—A white American housewife, aged 27, asked for relief of an atrophic erythematous skin eruption the size of a ten-cent piece (18 mm) on the right temple. She was given a number of intravenous injections of triphal, 50 mg each at weekly intervals (number unknown), with complete healing of the lesion. One year later a recurrence of the superficial erythematous type occurred on both temples and under the left eye and cheek. Eight injections of gold and sodium thiosulfate intravenously in 25 and 100 mg doses resulted in relief. Two years later she returned with a discoid infiltrative type of eruption on the temples and cheeks which had been present for eighteen months and slowly spreading. She was given four intravenous doses of gold and sodium thiosulfate, 100 mg each, and she stopped treatment for two years, at which time the lesion had spread and become scarred and infiltrated. She was then started on gold and sodium thiosulfate subcutaneously in 25 mg doses at weekly intervals. After thirteen doses there was very little spread and at the patient's request the injections were given intravenously. After fourteen weekly injections still no improvement was noted. Gold and sodium thiosulfate was then begun subcutaneously three times a week. She is still under treatment with very slight improvement.

This case illustrates the often observed good effect of gold preparations in the early erythematous type of lupus erythematosus. The almost complete lack of improvement under gold therapy in the recurring lesion is difficult to explain.

COMMENT

Doubtless all will agree that in the treatment of this disease the safety of the patient is of paramount importance. Particularly is this true in the dermatologic manifestations of disease, such as lupus erythematosus, which rarely produce death. In contemplating the treatment of such a disease, with a drug which is known to produce reactions, sometimes of a severe degree and occasionally death, one must weigh carefully the risks to be taken. If under the best care at least 25 per cent of cases treated result in reactions and one third are arrested or "cured" and one half are improved, the margin of profit in treatment does not seem to be great. But such is the situation after ten years of experience with the treatment of lupus erythematosus with gold compounds.¹³ However, when one considers how unproductive of results other therapeutic endeavors have been in the past, such results are, to say the least, gratifying. Since the more general use of gold compounds in lupus erythematosus the quantitative dose recommended has steadily lessened, and more and more one reads statements of relief of symptoms on dosages so small as to be hardly considered by earlier workers.¹⁴ As the heat of enthusiasm calms it must be realized that one cannot expect quite the curative results that were reported in the beginning, unless one is willing to sacrifice lives and health, and it must also be realized that the gold compounds are not specific for lupus erythematosus. As much as we would like to share Semon's¹⁵ prophecy and hope of 1927 that the gold compound will in the future be as specific and efficacious in lupus erythematosus as arsenic is in syphilis, we find it impossible to do so.

In all the cases herein reported we have throughout given amounts of gold that are relatively small in the

¹³ Wright,⁶ Cole,⁷ Monash and Traub,¹¹ Traub,¹¹ Jones,¹² Alden,¹³ Haxthausen,¹⁴ Treatment of Lupus Erythematosus by Intravenous Injections of Gold Chloride. Arch. Dermat. & Syph. 22: 77 (J. 1930).

¹⁴ Haxthausen,¹⁴
¹⁵ Semon, H. C. G. Treatment of Lupus Erythematosus by Kryol. Can. Brit. M. J. 2: 258 (Aug. 13) 1927.

light of previous reports, with results not as spectacular but comparable. We have used a prepared stable aqueous solution of gold and sodium thiosulfate which is simple in application and is given subcutaneously rather than intravenously and hence is less likely to result in accidents either from the method or from biologic phenomena. Taken as a whole the injection of gold and sodium thiosulfate subcutaneously in our cases has been free from fear of untoward reactions and simple in application and not uncomfortable to the patient, as well as efficacious in the relief of symptoms of lupus erythematosus. We believe that, all things considered, this method of giving gold salts to patients with lupus erythematosus is probably safer, more fool proof, simpler and probably as efficacious as the intravenous route.

711 Medical Arts Building

ABSTRACT OF DISCUSSION

DR. JAMES K. HOWLES, New Orleans. While my experience has not been that of the authors in some thirty-odd cases which have been treated at Charity Hospital we have noticed no untoward results, no general reactions. I have, however, as high a regard for the symptoms of pruritus in the treatment of intravenous gold preparations as I have for intravenous arsenicals. Perhaps much of the adverse criticism is due to the fact that proper preparation is not achieved or selection of cases is not practiced. The champions of other therapeutic agents in lupus erythematosus report results just as favorable and promising as those of the gold therapists. Bismuth, both the subsalicylate and other forms, bismuth oxychloride, the arsenicals in the pentavalent form, acetarsone and even tuberculin have had their proponents, so that the possibility of the nonspecific effect of this drug must not be disregarded. It is granted by all that it is not a specific drug and that the action is thought to be on the inflammatory process and the healing process, in fact on all the cells that take part in those processes. If such is the case, perhaps a combination of drugs might obtain the desired result. I wonder whether a combination of gold preparations with bismuth wouldn't obtain results more favorable than the individual drugs. Intramuscular or subcutaneous medication is safer than intravenous. The subcutaneous method is far more desirable, especially for general practitioners. Perhaps sensitization enters into the question, it may be possible in time to do skin tests to eliminate individuals sensitive to gold. I have often noticed in patients treated with intravenous gold preparations a complaint of pruritus immediately afterward and sometimes a slightly delayed reaction. In thirty cases I have never noted any severe reaction.

DR. M. E. OBERMAYER, Chicago. Drs. Alden and Jones have emphasized in their work the safety of this new method. It was with the same view in mind that we undertook at the University of Chicago in 1931 the clinical study of a new gold compound which was synthesized by Kharasch and Isbell of our Department of Chemistry. This compound is ammonium succinimide aurate, $\text{NH}_4\text{Au}(\text{C}_4\text{H}_4\text{O}_2\text{N})_2 \cdot 4\text{H}_2\text{O}$. Its toxicity is so low that 1 Gm. of the substance caused no toxic phenomena in a rabbit of 3 Kg. We have been using this compound for the last five years with satisfactory results. The therapeutic effect of ammonium succinimide aurate was found to be somewhat equal to that of gold and sodium thiosulfate, but it is in the paucity and mildness of the reactions that the new compound shows its superiority. Gold dermatitis for instance, was completely absent. In spite of single doses as high as 1,000 mg., the toxic reactions that have been observed so far were practically negligible. We feel that like Dr. Alden and Dr. Jones, we have contributed to the safety of gold therapy and a report on these studies will be made in the near future.

DR. MARTIN ENGMAN, JR., St. Louis. I would like to relate an incident that occurred in my father's ward when gold first came out. He had treated a few cases and had good results. One day there came to the ward at Barnes a patient with an acute disseminated lupus erythematosus. Gold was ordered intravenously, the dosage being stated to the intern. The next morning the patient was at least 50 per cent better and my

father remarked to the students and interns what a wonderful acquisition gold was in the treatment of the disease. Meantime the intern was pulling at his sleeve, trying to get a word in. "But Doctor, by some mistake the patient didn't get the gold that you prescribed." I don't know whether we are right or not, but we look at the leukocyte count as a rough guide and the type of lupus erythematosus as a guide in the administration of gold. If the leukocyte count is lower than 5,000, we decide that gold therapy should be delayed until the leukocyte count is brought up. We are not quite sure just why we do this, but we base it mainly on the fact that there is definitely a lowered leukocyte count in disseminated cases. We don't like to give gold in disseminated cases that are very acute or are becoming acute.

DR. JOHN HOWARD KING, Nashville, Tenn. About ten years ago the use of gold salts in this country created enthusiasm. Indiscriminate and indiscreet practice followed. During the past three years there has been much criticism of these drugs, tending to deprive physicians of their most valuable weapon in combating this disease. Recently I reviewed some work of Dr. Hamilton and myself. It covers a period of ten years. During that time we treated ninety-six cases of lupus erythematosus with sodium gold thiosulfate. We had no deaths. There were six obvious reactions. Only one was severe enough to put the patient to bed. This was an elderly woman with a distinct nephritis. The other five reactions were in ambulatory and casual patients. One patient had mild exfoliative dermatitis. The earliest sign was stomatitis, especially seen on the inner surface of the lower lip. That was our danger sign. Two unusual reactions were observed. The patients had malaise and soreness in the sides of the neck, a sort of cervical adenitis lasting three or four days. In the severe cases recovery occurred in three weeks. Between 1,100 and 1,200 doses were given intravenously. They varied from 10 to 100 mg. The majority were 100 mg. All but twelve patients were private patients closely observed. Various reports show from 20 to 30 per cent reactions. Several deaths are reported. Our percentage of reactions is about six, with no deaths. About 80 per cent of the cases were well arrested. About 30 per cent relapsed and were re-arrested. A small percentage were arrested the third time. I congratulate the authors on the presentation. It may prove to be a valuable contribution in preventing the discontinuance of this most valuable drug.

DR. WILEY M. SAMS, Miami, Fla. I should like to comment on Dr. Engman's remarks regarding the importance of leukopenia. I have had one serious reaction in a small number of cases treated. This reaction occurred after the woman had had a good number of injections without any reaction whatever. She had had no gold given for about three weeks, but during that time she had had dengue fever, a disease which is characterized by leukopenia. The next injection produced a fulminating exacerbation.

DR. HERBERT RATNER, Chicago. I should like to report briefly our experience at the University of Illinois. After Dr. Jones's preliminary report of this method of treatment we undertook it in some fifteen or twenty cases. We gave smaller doses, we didn't give them as often as the present report states but we soon discontinued the treatment because we felt definitely that results were not as good as with the intravenous method, and in almost every case we found it necessary to discontinue the subcutaneous method and go back to the intravenous. It is true that there was no pain and none of the reactions that are sometimes encountered when gold compounds are administered intravenously.

DR. HERBERT S. ALDEN, Atlanta, Ga. I had no intention of presenting too severe a picture of gold reaction, it was merely the picture that I get from the literature. It seemed to us that although the method was not as spectacular and not quite as immediately efficacious as the intravenous method, it would be the best method that could be used in a general way, particularly among the general practitioners. It is a method that one could prescribe for the general practitioner in the smaller towns surrounding one's community and ask him to give over a longer period of time without fear that the patient would get into difficulties. It was more with that in view that we reported these results, in an effort to give the country patient the opportunity to get gold by a safer method. In regard to Dr. King's remarks as to why he didn't get gold reactions, I have no

answer I don't think any one knows just why people have reactions to gold. We are glad to hear of Dr. Obermayer's gold preparation, ammonium succinimide aurate. It should prove to be of great value. I think one will find that if one uses the subcutaneous method of administering gold in the office or the clinic one will feel that it is not as spectacular, but for some of us who have small dermatologic clinics and treat referred patients coming from the outlying districts I am sure it will be of distinct value.

TERMINATION OF ONE THOUSAND ATTACKS OF MIGRAINE WITH ERGOTAMINE TARTRATE

MARY E. O'SULLIVAN, M.D.

NEW YORK

For the past few years in the neurologic service at Bellevue Hospital, under the direction of Dr. Foster Kennedy we have been studying the etiology and treatment of migraine. Realizing that this affliction is not a disease entity and that there is more than one precipitating factor in the production of this syndrome, we felt it essential to investigate this paradox from many different angles.

In a report in 1934 we¹ approached the problem from a pharmacologic point of view. At that time we administered known vasodilator and vasoconstrictor agents, also glandular products such as pitressin, extract of anterior pituitary, theelin and insulin. We also studied the effects of carbon dioxide inhalation, of vagomimetic and of sympathomimetic compounds on the attacks. These various medications were used in order to compare the relative effectiveness of numerous nonsedative measures in relieving the episode, as well as to determine the factors capable of precipitating a headache.

The diversity of our results during these investigations reinforced our belief that the pathophysiology in the production of migraine is not a single one. We did not prove its mechanism. Our results in appraising the nonsedative medicines used to relieve the attacks were more explicit.

Eleven medications were administered during the migraine headache in order to effect relief. They were caffeine, histamine, epinephrine, ephedrine, mechoin, amniotin, tissue extract, pitressin, amyl nitrate, calcium gluconate intravenously and ergotamine tartrate. Of these, ergotamine tartrate was the only drug that gave definite and constant results. Its effect was outstanding. The other medications might help on the first injection but fail at another time to benefit the very same person. These other measures might relieve two patients and then fail in seven others. The relief obtained from ergotamine tartrate was dramatic. It completely checked thirty-four headaches in fourteen patients. It failed to alleviate only five headaches in four patients. We noticed that, once it relieved an episode, control of future attacks in that individual was assured if the drug was given in adequate dosage.

In discussing the value of a medication in the treatment of as complex a syndrome as migraine a group of eighteen patients is not a sufficient number from which to draw any worth-while conclusions. Because of this and because of the consistent and spectacular

relief obtained from the drug, we felt that further study of its action in relieving the attack should be undertaken.

Our criteria for diagnosis and inclusion in our migraine research series have been discussed in a previous report.¹ These patients have received metabolic studies and blood chemistry and Wassermann tests. X-ray plates of the skull, the sella turcica and the nasal accessory sinuses were taken, and also a gastro-intestinal and a gallbladder series if indicated by the anamnesis. The patients were thoroughly examined for any pathologic process that might be active in the various bodily systems, since they were examined by a psychiatrist, an allergist, a rhinologist and an ophthalmologist.

CHECKING OF ATTACKS BY SUBCUTANEOUS INJECTION

We have now used ergotamine tartrate over a two year period and can discuss our results after having administered the drug for the relief of 1,132 headaches. There were ninety-seven patients—seventy-eight females and nineteen males—in this later study. Their ages varied from 11 to 51 years. They had suffered from migraine for from six months to forty-eight years, the average duration of the illness was sixteen years, the frequency of the attacks varied from two a week to one or two a year.

All but eight of the ninety-seven patients were benefited by this medicament. It completely checked 1,042 episodes in eighty-nine persons. Of the eight patients whose headaches were not controlled by ergotamine tartrate there were four who believed that the pain was alleviated by the injection. The relief obtained was not complete, however, and "of no more benefit than a headache powder." They were not included in our larger group because its criterion is abrupt termination of the attacks.

We found that there was no difference in the action of the medicament when given to men and to women. It was administered to nineteen men and all but three of them were benefited by the alkaloid. The proportion three out of nineteen is practically the same ratio that occurs with the common use of the drug.

Early in our investigations we realized that ergotamine tartrate could not be used as a cure for migraine. It is most impracticable to dispense it as a preventive of the attacks even though it is of unquestionable value in aborting them. This ability to check the episodes unfailingly is, however, a worthy tool to use while one is searching for a cause and cure of the malady. It gives the investigator something very definite to offer the patients, without interfering with the effects of his other investigations. It bolsters the patient's spirits, many of them stating "Well, if you can't do any more for me than you have done, it will still be very wonderful."

Ergotamine tartrate has no effect on the frequency of the attacks. Several patients stated in their usual disheartened manner, that the episodes were coming more frequently since they had been receiving the injections. On examining our charts and studying the intervals of the headaches before and after the use of the drug, we noticed a shorter interval occurring in only three of our patients. Two of these, were women at the menopause, and one was a man aged 48. They had suffered from migraine "all their lives" and the interval had become shorter and shorter through the years, therefore this diminishing frequency should not necessarily be considered an effect of ergotamine tartrate. At other

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The author is indebted to Fredrika Wilcoxon for technical assistance.
1. Brock, Samuel O'Sullivan, Mary E. and Young David. *Am J. Sc.* 188: 253 (Aug.) 1934.

times, when from our data we felt that the drug was increasing the attacks, with further study this lessened interval was found to be only temporary. Such an irregularity in the occurrence of the episodes is a very characteristic finding in migraine, whether the patients take any medication or not.

A number of these men and women have expressed the fear that the beneficial effects of this medicine would wear off. They said that all the other medications that they had ever taken would relieve the attacks for a few months but after a short time would become ineffective. Their skepticism has so far proved to be unfounded. While using ergotamine tartrate over a two year period we have never seen it fail to check an attack merely because of continued usage. One individual whose attacks have been coming weekly has received 129 injections, another patient sixty-four and a third fifty-eight, they have always had unfailing relief from this medicament.

The same infallibility holds true for all our eighty-nine patients. Once ergotamine tartrate has abolished an attack, it has never failed, in our two years' experience, to check again a migraine headache in that individual if given in adequate dosage.

DOSAGE

The amount of alkaloid required to effect relief, however, is very important in proving or disproving this infallibility theory and is worthy of a little consideration. The minimum effective dose, of course, is directly proportional to the severity of the attack. The severity of the consecutive attacks in migraine, as every one knows, is exceedingly variable. Some attacks will be particularly intense, continuing for two or three days, while others occurring in the same individual will be rather moderate and will last only a few hours. Unless one keeps this in mind the headaches may be abruptly terminated four out of five times, but the fifth attack may be one of these very severe ones, the dose may be inadequate, the effect disappointing and the patient discouraged. By anticipating this (the patients can usually tell when they are 'in for a bad one'), a slightly larger dose may be given and an unsatisfactory experience avoided.

Eight episodes, which would have continued for from three to five days if they had not been checked by the alkaloid in from one to three hours, returned from twelve to twenty-four hours after the injection in eight of our cases. This recurrence of the headaches is the exception and not the rule, however, for the same eight persons have obtained complete and permanent relief from sixty-two other attacks. We believe that this reappearance is again probably the result of inadequate dosage. A second injection will control this returned episode.

While discussing dosage and tolerance, we felt that it would be of value to study our records and to compare the amount of alkaloid required to terminate an attack at the onset of therapy (ergotamine tartrate) with the minimum effective dose after the drug had been administered for over a year. To our amazement we found that not only were none of the patients requiring more of the medication but many of them were requiring smaller doses now than at the onset. I do not wish to leave the impression, however, that we believe that this lessened dosage is due to any effect from ergotamine tartrate, that would not be correct. It is probably caused by several other factors.

In the first place, we have observed that the earlier in the attack the drug is given the smaller is the dosage

required. Once the episode has reached its peak, the patient prostrated, vomiting and unable to raise his head from the pillow, a much larger dose is necessary to check the attack, and it takes much longer for any amount to give relief. The after-effects of both the headache and the ergotamine are much more disagreeable.

If patients will take the medication the moment they feel the prodromes and are sure that they "are in for a real one," the attack may be completely aborted by a smaller dose in much less time and the untoward effects of the drug will be greatly lessened.

From our experience, after using many experimental procedures in attempting to find a cure for migraine, we have concluded that ergotamine tartrate may be used in conjunction with these other measures without coloring their results. Therefore, we have given this drug during the administration of an expected cure in order to control those attacks which may break through. This explains why many of our patients now require a smaller dose of ergotamine tartrate to check the attacks than they did at the onset of therapy, because these preventive measures have been lessening the severity of the episodes and likewise decreasing the minimum effective dose.

Any disease that will incapacitate an adult, interfering with his work for a day or more from one to four times a month is a definite economic liability. Eighty-four persons in this series suffered from migraine attacks at least once a month or more. The time necessary for ergotamine tartrate to effect complete cessation of the episode, even though it would ordinarily persist for from two to three days when given hypodermically, was from fifteen minutes to five hours. This varied in individual cases with the dosage, with the time of administration and with the severity of the attack. We have calculated from our records that the subjects in our series were freed from approximately 39,000 hours of suffering.

Three individuals whose attacks always occurred in the middle of the night or the early morning, awakening them from their sleep, would get out of bed, take their medicine, return to bed, awaken the next morning and go to work as if nothing had happened. Without this drug they would have been incapacitated from their work for at least an entire day.

One woman who is at the menopausal age and whose attacks have been coming weekly during the entire year and continuing for two or three days has stated over and over again that she does not know how she would exist if it were not for this medication. She is a school teacher and by necessity self supporting. Without the medicine she believes that she could not carry on.

Concerning the administration and dosage of ergotamine tartrate, there are several points worthy of discussion. In this country the drug² is prepared in tablets containing 1 mg of the alkaloid and it is also marketed in solution in sterile ampules for intramuscular and intravenous use (0.25 mg = 0.5 cc and 0.5 mg = 1 cc). Some investigators have applied the drug to the nasal mucous membranes,³ others have incorporated it into suppositories for rectal absorption.

Our method of administering the drug subcutaneously is to inject a trial dose of 0.25 mg, and the effectiveness of this we use as an index to future medication. If the drug is well tolerated and if it

² Trade name Gynergen manufactured by Sandoz Chemical Works Inc. to whom we are indebted for a liberal supply of this alkaloid for our investigations.

³ von Storch T. I. C. Personal communication to the author.

terminates the attack within two hours, we consider that dosage a satisfactory one for future episodes. It is advisable to repeat the initial dosage of 0.25 mg. if after two or three hours the headache persists, or if after from eight to twelve hours the attack returns. If repetition has been necessary, we consider our original order inadequate and for future attacks 0.5 mg. is given.

We have never injected a larger dose than 0.75 mg. of ergotamine tartrate subcutaneously to relieve one attack, and this amount has been used only three times in our investigations. It is quite rare that a patient needs more than 0.5 mg., and this is a usual and safe amount.

ORAL USE

In dispensing the alkaloid orally we have observed that if the required amount is taken at once, rather than in divided doses, a more efficient relief will be obtained. One tablet contains 1 mg. of the alkaloid. We have given as many as five of these at one time to check an attack. If as large a dose as this is used, we would strongly advise against administering any more ergotamine tartrate within twelve to twenty-four hours.

If, before the medication is given, nausea and vomiting have set in, it is useless to dispense the tablets. They will probably only increase this condition and will interfere with the use of the medicine hypodermically.

It has been suggested that the ergotamine tartrate by mouth, one tablet three times a day, will prevent the migraine attacks from appearing.⁴ We do not recommend this method of dispensing the drug. Migraine is a protracted condition and we do not know what serious effects the daily use of the drug over long periods of time may have on our patients.

Although this form of medication may prolong the interval in between the periods and although it may abort some of the milder headaches and even diminish the intensity of a few of the more severe ones, it will not completely inhibit or cure the pathologic condition.

In the third place, the migraine attacks occur very irregularly and undependably in most patients. To give as costly a medicament as ergotamine tartrate daily, when if no medication were taken the patient might go for several weeks without an attack, is wasteful. In a patient who has been suffering from weekly or biweekly headaches the attacks may spontaneously come at monthly or bivearly intervals, and the medication would have been given in vain.

Early in our investigations we tested the value of this method of therapy and found it unsuccessful. One of these patients, after the foregoing method of dispensation failed, took the pills, two or three at a time, the minute she felt an attack appearing. This dosage seemed to stall off an episode for that day, but it usually reappeared on the following one, necessitating further therapy. She continued in this manner for several months and was taking therefore, two or three pills daily, or approximately 10 to 21 mg. of the alkaloid a week. We have advised against this medication and are administering the drug hypodermically. If the attacks occur twice a week she receives only 0.5 to 1 mg. a week because her headaches are completely terminated by 0.25 to 0.375 mg. when the alkaloid is given subcutaneously.

The results of the alkaloid, no matter how administered, will be much more satisfactory if the drug is used early in the attack. As soon as the patient realizes that an episode is inescapable the prescribed dosage

should be taken. If the injection or the pills are given during the peak, with the patient vomiting and prostrated, the headache will be more difficult to control. The beginning of an attack and the tail end are readily checked by a smaller dose.

It is most important that the patients lie down after the medication. A headache that can be checked within one to two hours may be considerably lengthened unless the patient relaxes after its administration. Our routine clinic order is to rest for from one to two hours or until the headache has completely disappeared.

The results obtained from the use of ergotamine tartrate orally and hypodermically in controlling the migraine attacks are so dissimilar that it is necessary to discuss them separately. A statement which is an accurate description of the effects following hypodermic injection cannot be applied to the response obtained from the tablets. All the previous assertions concern the reactions that occur after the subcutaneous use of the alkaloid.

We have dispensed the tablets to forty-five patients and only thirty-one of them obtained complete relief; this does not equal the 92 per cent of patients who were benefited by the injection. The time required by the tablets before termination of the attack can be expected varies from one to eight hours, averaging about five hours. The average time required for the injection to check the attack is from one to three hours.

The theory of the individual infallibility of ergotamine tartrate, once it has relieved an attack, is fallacious when applied to the effect of the tablets in relieving the headaches. Their beneficial action is dependent on too many factors, such as the state of the gastro-intestinal tract at the time of dosage, the severity of the attack, and the time of administration of the drug. No matter how many times tablets have aborted a headache, if there is severe nausea, if the attack is too intense, or if their administration has been delayed too long, the oral use of ergotamine tartrate may fail to give relief.

Because the tablets are less dependable does not mean that they should not be dispensed for relief of the episodes. Their advantage over the hypodermic use of the drug is obvious and any medication that benefits 69 per cent of the migraine patients is of definite value in the treatment of this enigma. I have stressed these differences in action between the two forms of the alkaloid because I feel that one should not condemn the drug because of the failure to check the headache following its oral administration.

CONCOMITANT SYMPTOMS AND THEIR ALLEVIATION

Although ergotamine tartrate, subcutaneously, caused abrupt termination of 1,042 headaches in eighty-nine patients and, when given orally, it completely checked sixty-three headaches in thirty-one patients, it did produce uncomfortable concomitant symptoms in many individuals.

These untoward effects were nausea, vomiting, weakness of the legs, stiffness of the joints, a sense of constriction in the throat, a heaviness of the chest, and a burning and tingling of the fingers and toes.

These symptoms did not all occur in the same patient at one time. Forty-two patients vomited after ergotamine tartrate. In eighty-three of our patients nausea and vomiting were associated with the headaches even before any medication was given. There was no direct relationship between the occurrence of the gastric symptoms before and after the medicament. Five patients

⁴ Podalsky, A. West Virginia M. J. 20, 173 (April) 1933. Trautmann, E. Munchen med. Wchnschr. 53, 513 (March 21) 1928.

vomited after the drug, and in these individuals there has not been any gastric complaints with the attack. Ten persons who did not suffer from nausea and vomiting with the headaches felt no gastric distress after the drug.

Twenty persons who suffered from these gastric disturbances before the medication were indifferent to their occurrence after ergotamine tartrate because they associated vomiting with relief of the attacks and rather expected it.

In ten patients, if the medicament was given early enough in the episode the entire attack could be aborted, the headache effaced and the individual entirely well before the gastric symptoms had a chance to develop. In these persons, if the attack should continue to its peak, these gastric disturbances would become very intense.

When the nausea and vomiting following ergotamine tartrate therapy are severe enough to disturb the patients, atropine $\frac{1}{100}$ grain (0.0006 Gm.) injected with the alkaloid, or any time after its use, will alleviate this distress. It was necessary for us to use this combination on only twelve occasions, because we were able by our concurrent therapy—the administration of calcium⁵ chondroitin sulfuric acid⁵ or an estrogenic preparation (progynon)⁶—to diminish the vomiting occurring both with the migraine attacks and after the administration of the drug. These gastric disturbances were by far the most frequent of the untoward results of the drug. Nineteen of our patients, however, described muscle pains following the injection. In three of them they were very severe and continued for a day after the headache had been abolished. The milder forms of this muscle pain were described by a few other persons as a restlessness and an inability to find a comfortable spot for their arms and legs.

Calcium gluconate 10 cc intravenously will relieve these muscle pains almost immediately, and daily calcium therapy will diminish or prevent their recurrence. Atropine hypodermically or orally, in the foregoing dosage, has inhibited and relieved them on several occasions.

Thirty-seven of our patients complained of generalized weakness associated with the migraine attack. Fifteen individuals stated that, after the alkaloid had eliminated the headache, their legs felt tired and weak. It is rather difficult to determine whether this asthenia was caused by the drug or whether it was a coexistent migraine phenomenon that the drug was unable to eliminate. A few of the patients state with certainty that this "all in" feeling is more noticeable to them after the drug than before.

One patient who left the clinic without obeying our routine instructions of lying down for an hour after the medication fell down a flight of clinic steps. She described the accident by saying "My legs just gave way, my knees buckled under me."

Ergotamine tartrate caused a stiffness of the joints in four individuals, in two it affected the jaw, in one the shoulder and in another the ankles.

Two persons felt a slight heaviness in the chest "as if a weight had been placed there," a feeling that made them want to take a deep breath. Six others said that there was a constriction in the throat, "a funny sensation." This did not seem to be particularly disturbing to any of them and occurred rarely.

Two patients complained of numbness and burning of the fingers, which was increased when the hands

were placed in very hot or very cold water. We observed on two occasions a painful swelling and redness of the fingers and toes after we had administered ergotamine tartrate and atropine to one of our ward patients. This woman has since received several injections of ergotamine tartrate alone when this did not occur.

SIGNIFICANCE OF SYMPTOMS

To those who are familiar with the signs and symptoms of ergotism and its complications, some of these symptoms are portentous. I do not know what the effect of the continued use of this drug may be. I have searched for pathologic changes in electrocardiographic studies on those patients who have taken medication for eighteen months or more and have made frequent blood pressure, blood sugar and kidney studies but have never found any organic changes.

Migraine is a chronic ailment, however, and may last from twenty to forty years. What the action of this medicament on the vascular system will be if used for that length of time, no one can say.

It is important, therefore, to consider this affliction as a syndrome and not as a disease entity, and to realize that more than one factor can precipitate an attack in the migrainous individual. Unless one studies patients and treats any pathologic process, including psychic factors, that may be present, one may be injuring the future health of these persons by administering this alkaloid in large doses over long periods of time. If, however, each individual is carefully studied and if any abnormality—ophthalmologic, gastro-intestinal, functional, infectious, glandular or allergic—that may be present is treated, the severity and frequency of the episodes can at least be lessened. In this manner we have in many instances⁶ reduced the yearly intake of the alkaloid to an almost negligible quantity.

Spontaneous cessation of the attacks in migraine is a characteristic observation. In almost any therapeutic and statistical study of the syndrome one can report complete cessation of the attacks in a few patients. In this series two women, both at the menopausal age, have now been without episodes for more than eighteen months. Neither of them had received more than two injections and both of them had suffered from migraine all their lives at monthly intervals.

That psychic factors can precipitate attacks in migrainous persons, most of us who have had any experience with the syndrome will not deny. That they are the only factors in the production of the episode is not in accordance with the observations of this clinic. That psychic factors alone can completely check 1,000 full-blown migraine attacks within from fifteen minutes to two hours, I challenge.

Considering this possibility at the beginning of the investigations, we administered almost all our medications subcutaneously. Because of this, we were able to inject sterile water, pitressin, epinephrine, mecholol, and the like without the patient's knowledge of the contents of the syringe. During an attack, after we had attempted to give relief by several of these measures and they had failed, we would administer ergotamine tartrate. Occasionally some other medicament would alleviate the attack, but there was no comparison between the character, the frequency or the constancy of the relief obtained from these preparations and from the alkaloid of ergot. The results of other workers substantiate further the belief that the pharmacologic action of ergotamine tartrate in checking the episode is not merely a suggestive one.

⁵ To be reported.

The use of this alkaloid in the treatment of migraine is not a particularly recent therapeutic measure. Lennox and von Storch⁶ in their latest discussion of this therapy have totaled the number of cases reported in the literature. They state that the dozen authors who have given the drug to 300 patients agree that the administration of ergotamine tartrate is effective in stopping migraine headache in the great majority of patients.

How the alkaloid checks the attacks no one really knows. From our experience in this clinic we do not believe that the therapeutic action is merely analgesic. One patient, who received ergotamine tartrate during a headache, had been suffering simultaneously from a toothache. Ergotamine tartrate checked the migraine attack but gave no relief to the molar pain.

Another man, who entered the hospital because of a severe continuous pain in the ulnar nerve, the result of a gunshot injury, developed, while in the ward, one of his biyearly migraine attacks. He had suffered from migraine all his life. The alkaloid was injected and the headache was abolished. The intense pain in his hand, however, was unaffected.

The theory that the pharmacologic reaction of ergotamine tartrate which relieves the migraine attack occurs at the sensory endings is not consistent with the foregoing. Nor does it explain the large number of headaches that occasionally occur in normal people following its injection. We have given the alkaloid to patients suffering from various types of headache that have not in the least resembled migraine. These headaches are usually unaffected by the alkaloid.

Because of the high percentage (90) of satisfactory results obtained by using ergotamine tartrate in the treatment of the migraine attack, in comparison with the very low percentage of satisfactory results obtained by using it in the treatment of those headaches occurring in the general medical wards, we believe that the reactivity of the drug is more intimately related to the pathophysiologic mechanism of the migraine attack than is suggested by ascribing its action to an analgesic effect. We do not consider the reaction to be a direct one but believe that the action of the alkaloid seems to be dependent on the humoral state of the organism.

The suggestion that the effectiveness of the alkaloid varies with the chemicals and hormones circulating in the blood is based on the differences that occur following administration of the drug to obstetric patients, as well as on the differences occurring when the drug is administered along with other medicaments, for example, calcium, epinephrine, atropine and some of the glandular products.

It is very rare for the obstetrician to see the many untoward results that we have noticed following the use of the alkaloid in normal and migrainous patients. The obstetrician casually prescribes doses which from his experience he knows to be perfectly safe and effective, but doses which we would be extremely cautious in using. This increased tolerance to the drug at parturition, this failure to relieve the general medical headache, the abrupt termination of the classic migrainous attack, have led us to the assumption that the activity of the drug does not merely effect a paralysis of sensory nerve endings but is more intimately connected with the complex mechanism of the still unexplainable migraine seizure.

SUMMARY

1 Ergotamine tartrate was administered to ninety-seven patients and checked or aborted 1,042 attacks in eighty-nine of these persons.

2 It was calculated that the individuals in our series were relieved from 39,000 hours of suffering.

3 The earlier in the attack the medication is given the better are the results.

4 When used subcutaneously, the alkaloid has never failed to check again an attack in a person previously relieved if the drug was given in adequate dosage.

5 Untoward effects of the drug may be relieved by simultaneous injection of $\frac{1}{100}$ grain of atropine or calcium gluconate intravenously.

6 I do not consider the drug a cure for migraine. I strongly advise against its dispensation without a consideration of the cause and prevention of the syndrome.

CONCLUSION

Because of the constancy and character of the relief obtained from 1,042 headaches in eighty-nine sufferers of migraine after the administration of ergotamine tartrate, I recommend its use for the termination of these attacks and believe that the drug is a valuable addition to medical therapeutics.

8 West Sixteenth Street

Clinical Notes, Suggestions and New Instruments

DUPLICATING FILMS OF ROENTGENOGRAMS

MAX COHN, M.D., CHICAGO

The making of roentgenograms in a hospital occasionally leads to a controversy between the patient, the physician and the roentgenologist over ownership of the original film.

Positive prints from roentgenograms are unsatisfactory and except in certain simple cases the fine details of the original are inadequately reproduced.

Until recently it was necessary for the maker of a roentgenogram either to protect himself by keeping the film in his possession or to satisfy the physician and the patient at the risk of criticism, should he be unable to produce the film for medical or legal purposes at some future time.

A new photographic material called "Direct Duplicating Film" is now available. With this film any number of exact duplicates can be produced from original roentgenograms by direct contact printing without the necessity of making an intermediate film with consequent loss of detail. The film has characteristics exactly opposite those of normal photographic film.

If developed by a safelight without having been exposed to light, Direct Duplicating film becomes entirely black, developing to maximum density. If, however, the film is completely exposed to white light and then developed, the film remains clear and transparent. This material forms a positive image directly from a positive, becoming clear and transparent when exposed to transparent areas of the film being copied and becoming progressively darker and more opaque as the film to which it is exposed becomes darker and more opaque.

Developing, fixing and washing correspond in every way to the ordinary handling of any other film. Provided exposure and processing are correct, the duplicate will for practical purposes equal the original. The duplicating film is a so-called "safely" film.

In making a duplicate of a roentgenogram it is possible to print a caption on the duplicating film which may be an identification or may correspond to an official certification that it is

⁶ Lennox, W. C., and von Storch, T. J. C. Experience with Ergotamine Tartrate in 100 Patients with Migraine. J. A. M. A. 105: 169 (Nov. 2) 1935.

From the X-Ray Department, Mount Sinai Hospital, 1 Appleton Corporation, Longham, N. Y. Available from General Electric Company.

film was taken during an examination made on a certain date by a certain person, and that the original film is on file at a designated hospital or radiologic clinic.

The possession of direct duplicates of roentgenograms would often allow the patient in accident insurance cases not only to recover the cost of examination but, through possession of adequate evidence to guard against an unwarranted increase in premium at a later time.

In the course of a series of examinations for life insurance or for recording pathologic changes over a period of time duplicate x-ray films could be included with copies of the physician's report.

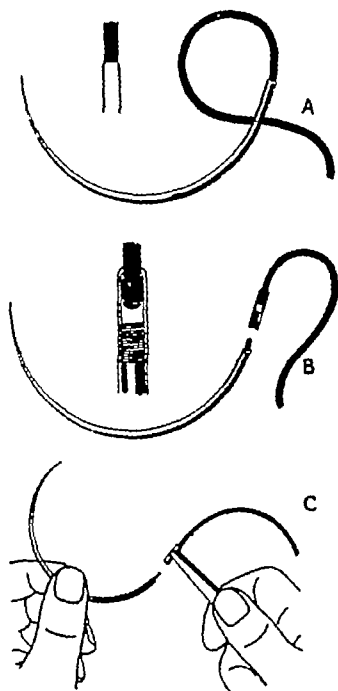
The roentgenologist seldom cares to give away the originals of rare films, and because of the difficulties that formerly prevented satisfactory photographic reproduction of roentgenograms and the totally unsatisfactory nature of most printed reproductions the widespread circulation and study of many valuable films has been impossible.

With Direct Duplicating films, satisfactory duplicates can at last be made and the duplicates circulated in medical and educational institutions like prints from an ordinary photograph. By printing the maker's signature on the duplicating film when the original roentgenogram is being reproduced the duplicating film is acceptable as evidence in case of litigation.

SOLUTION OF THE NEEDLE AND THREAD PROBLEM

J. EASTMAN SHEEHAN, M.D., NEW YORK

For delicate suturing, the needle with an eye was larger at the head than in the shaft and so produced an aperture in the skin that was needlessly large. But its life was good for several threads. To overcome the major defect the thread was inserted in the body of the needle, allowing shaft and head to be of one thickness. But the life of the needle was then the life of one thread.



A needle with suture thread and screw head assembled B parts separate C with forceps to attach and detach

The needle here portrayed, of my design readjusts the balance. The problem of dimension is solved by retaining the thread enclosed in the needle body. But when the thread has been used it may be discarded together with the fitting that holds it by the simple process of unscrewing that fixture. Another thread with similar screw attachment is then sub-

stituted, and the suturing goes on without the needle even being withdrawn. This is repeated as long as the needle is sharp enough for its purpose when a new or unfinished thread is attached to a new needle. About six threads can be so used with one needle, and the supply is arranged on that basis.

833 Fifth Avenue

Special Article

DRUGS USED IN THE TREATMENT OF CIRCULATORY FAILURE IN ACUTE INFECTIOUS DISEASES

CARY EGGLESTON, M.D.

Assistant Professor of Clinical Medicine, Cornell University Medical College, Visiting Physician Second (Cornell) Medical Division, Bellevue Hospital, Associate Attending Physician, New York Hospital

NEW YORK

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Ed

The discussion of the use of drugs in the treatment of the circulatory failure seen in acute infectious disease is fraught with difficulty because of the limitations of our knowledge of the mechanisms responsible for the failure. Clinically the usual type of failure appears to be due to loss of peripheral vascular tone or a vasomotor paralysis. Much less commonly the evidence seems to point to a primary failure of the heart. In many instances both vasomotor and myocardial failure appear to participate to varying degrees. It is unfortunately not always possible clinically to assess the relative part played by either form of failure, so that treatment frequently cannot be based on a clear concept of the mechanism or mechanisms involved.

In bacterial endocarditis, acute rheumatic fever and diphtheria the heart is known to be damaged directly. But even in these diseases there is no unanimity of opinion as to the mechanism of the circulatory failure that may develop. In some cases it seems clearly to be of cardiac origin, and there are many clinicians who accept this as the established mechanism. The presence of cyanosis, congestion of the lungs, occasionally some dyspnea, and distention of the veins definitely indicates myocardial failure. But in most instances these are more or less masked by signs and symptoms referable to peripheral vascular failure. The latter include pallor, extreme weakness, sweating, decreased blood pressure, low pulse pressure and rapid, feeble pulse with poor heart sounds, these are the manifestations of shock or collapse. Because of the frequent presence of the latter symptoms, many believe that even in diphtheria, rheumatism and bacterial endocarditis, the circulatory failure usually is due to the participation of both cardiac and vasomotor mechanisms.

It is now generally accepted that the other acute infections cause little or no direct myocardial damage except the cloudy swelling common to febrile and infectious processes. The circulatory failure in these is concededly of the vasomotor type. The acceptance of this concept, however, does little to simplify the problem of treatment, since one or more of several factors

may be responsible for the failure of the vasomotor mechanisms. Despite extensive clinical and experimental investigations, knowledge of the various factors is still far from complete. Severe, acute dehydration may be produced by excessive sweating, vomiting or diarrhea, alone or in combination. It may cause a sufficient fall in blood volume to reduce the output of the heart so greatly that the vasomotor center begins to fail and thus initiates a rapidly fatal collapse. Unless promptly checked, this process may be complicated by the effects of toxins arising from dehydration itself as well as from the inadequate blood supply to the tissues. It is known that histamine and guanidine may be produced in excess under such circumstances. Through direct action on the blood vessels these toxins may cause great vascular dilatation with secondary marked reduction in both blood pressure and cardiac output and either initiate or aggravate extreme circulatory collapse. It is probable in acute infections that yet other toxic substances may arise which can produce the vasomotor form of collapse.

The vasomotor center may remain functionally active, as has been demonstrated in the collapse produced in both pneumonia and diphtheria. In diphtheria there is reason to believe that the toxin may act directly on some portion of the splanchnic nerves to produce wide dilatation of the splanchnic blood vessels. This, in turn, may be sufficient to induce an excessive fall in blood pressure and a secondary depression of the vasomotor center as previously described. Finally, it is known that acute circulatory collapse may be caused by reflexes acting through the central nervous system, and it is possible that similar effects may be produced through the direct action of toxins arising in the course of some of the acute infections such as meningitis.

The preceding brief review of some of the more likely mechanisms that may be involved in the causation of circulatory failure and the great difficulty of reaching a correct mechanistic diagnosis justifies the contention that most of the treatment recommended is largely empirical. Christian¹ is right in his statement regarding the treatment of circulatory failure when he says "Of those recovering, more get well than are cured." The following discussion of drugs is presented in the light of the foregoing review of the problems.

Caffeine is probably the most widely used drug. Its actions are diverse and not very readily controllable. Through direct stimulation of the higher portions of the central nervous system, it may diminish the patient's exhaustion and improve his sense of well being. By direct action on the medullary centers, it stimulates respiration and to a variable extent also stimulates the vasomotor center and may tend thereby to raise the blood pressure and improve vascular tone. Through direct action on the heart muscle it may raise its tone, increase both the strength and completeness of its systole, promote diastolic relaxation, and, if it does not cause too much acceleration in the heart rate, may result in an increase of the cardiac output. These actions may be further enhanced by some improvement of the coronary circulation by a specific dilatation of those vessels. On the other hand in susceptible individuals or when the dose is too large it may prove harmful by causing mental excitement, insomnia and marked irritability. Large doses may also produce harmful tachycardia and directly impair cardiac output by diminishing diastolic relaxation. If either of these

detrimental effects is produced, its administration should be stopped or the dose reduced. It is generally best administered hypodermically in the form of a sterile solution of Caffeine with Sodium Benzoate. The average single dose lies between 0.3 and 1 Gm. Its frequency of repetition should be guided by its effectiveness and the presence of indications for its further administration rather than on any arbitrary schedule. Its action usually lasts about two hours but seldom for much longer. It should be regarded as an emergency remedy and its use stopped when it is no longer needed. It may be administered intravenously by slow injection through a small needle. Its rapid injection is distinctly dangerous. The other purine derivatives, such as theophylline and its compounds and theobromine, are too feeble as compared to caffeine in their actions as cardiac and vasomotor stimulants to be of value in the treatment of circulatory failure.

Strychnine is believed by some to be valuable by others to be useless. If it is to be used it should be administered in doses much larger than are commonly employed. At least 0.002 Gm is required, and single doses of from 0.003 to 0.006 Gm are more certainly effective. It should be administered hypodermically. The dose may have to be repeated every three to six hours. The patient should be observed closely for the possible appearance of reflex hyperexcitability. Its mode of action is chiefly indirect as a result of increased nerve irritability, which enhances the tone of the heart and blood vessels. Its administration is unfortunately without benefit unless it is employed in doses verging on the toxic, and many of the failures have been due to the fear of giving it in adequate doses.

More certainly effective than any other agent for the promotion of peripheral vasoconstriction is epinephrine. This should be administered in the form of the solution of Epinephrine Hydrochloride, which may be injected intramuscularly in doses of from 0.6 to 1 cc, or the same doses can be made much more effective, yet safe, if injected slowly and continuously into a vein. For the latter mode of administration 1 cc of the solution may be added to a liter of physiologic solution of sodium chloride or to the same volume of 5 per cent solution of dextrose. By these procedures one combines the prolonged maintenance of vasoconstriction at a readily controllable level with the restoration of both fluid and salt or dextrose. Both fluid and salt are of great value when much has been lost through diarrhea, vomiting or sweating. From 1 to 3 liters of such solutions may be infused slowly during twenty-four hours in desperate cases.

The intramuscular injection of epinephrine may elevate the blood pressure and stimulate the heart but these effects are generally slight and inadequate, and of brief duration. This is due to the intense local vasoconstriction at the site of injection, which further impairs absorption already reduced by the failing circulation. Absorption may be promoted and the action of the drug somewhat prolonged by occasional massage of the site of injection. The actions of epinephrine can occur only after absorption into the blood stream and they are of short duration unless the drug is supplied in adequate concentration either continuously or at brief intervals. It is theoretically the best of all available drugs for use in peripheral circulatory failure for it acts directly on the endings of the vasomotor nerves to produce vascular constriction and elevation of blood

¹ Christian, H. A. The Diagnosis and Treatment of Diseases of the Heart. Oxford University Press, p. 53.

pressure, and at the same time it stimulates the heart through the sympathetic nerve mechanism as well as by a probable direct action on the myocardium. It is contraindicated in those patients whose blood volume has been much reduced by loss of water through diarrhea or sweating. This is because vasoconstriction takes place as a natural compensatory mechanism under such circumstances. If this constriction passes an optimal degree, it aggravates the circulatory failure by interfering with return flow to the heart and thus further reduces the heart's minute volume output. Its use in improperly selected cases may aggravate the condition to relieve which it was given.

Both Ephedrine and Solution of Posterior Pituitary have vasoconstrictor actions which result in some elevation of the blood pressure. Their actions can be secured by subcutaneous or intramuscular administration if the circulation is adequate to permit their absorption. Hence they are best used at the inception of circulatory failure, or even prophylactically when its development seems imminent. Unfortunately, in actual practice they have not proved either of much value or very trustworthy, and the too frequent repetition of pituitary may lead to depression of the tone of the vasoconstrictor system with resulting fall in blood pressure. Ephedrine Sulfate or Hydrochloride may be used in single doses of from 0.03 to 0.1 Gm. for an adult. It may be repeated according to the patient's needs, but frequent or large doses often cause rather excessive nervousness and sometimes produce vomiting. Pituitary is best given in a single dose of from 0.5 to 1 cc. of the official solution. This may be repeated at intervals of one to four hours, but it is seldom either wise or necessary to repeat more than two or three times, as further doses rarely prove of value.

Digitalis and strophanthin are of no value in the forms of collapse not due to failure of the myocardium. They are, in fact, often harmful and should be regarded as definitely contraindicated. Even in those instances in which circulatory failure appears primarily due to cardiac failure, however, these agents usually prove worthless. This may be ascribed to their inadequate absorption, to their inability to offset the more powerful actions of the toxins already influencing the heart, to the fact that the heart in such patients is too severely damaged to respond to any stimulation, or to the simultaneous presence of peripheral vascular failure. Whatever the true explanation, the fact remains well established that members of the digitalis group of drugs are either contraindicated in the circulatory failure of acute infections or prove wholly ineffective in its attempted control.

Camphor and the unofficial substitutes, such as cardiazol or homocamfin, are too untrustworthy to deserve mention. Whatever stimulant actions they may occasionally produce are chiefly on the respiratory center or reflexly through local irritation of the tissues at the site of administration. Even these slight actions are too fleeting to be of any considerable value.

Experience seems to indicate that the most promising plan of treatment should include one or more of the following procedures in addition to such preventive measures as the provision of rest, adequate and balanced diet, sufficient fluids during the course of the acute illness, and the administration of oxygen by nasal catheter or tent when indicated by the presence of cyanosis, anemia or anoxemia. From 50 to 100 cc. of 50 per cent dextrose solution should be administered

intravenously once or twice in twenty-four hours. Caffeine or strychnine, as previously discussed, should be injected promptly at the first evidence of failure. If the loss of fluid and salt has been excessive, slow intravenous infusions of physiologic solution of sodium chloride should be given in amounts of 1 to 2 liters. The heart will not be overtaxed by too large a volume of fluid if the injection is stopped at the beginning of a rise in the venous pressure, which now can be measured easily by the direct manometric method. In cases associated with intense diarrhea, infusions of not over 300 cc. of a 5 per cent solution of sodium chloride may be most valuable. Transfusions of blood, if feasible, may help materially. Only when these measures are unavailing is it wise to resort to the addition of epinephrine to the transfusion or the simultaneous injection of either ephedrine or posterior pituitary.

125 East Seventy-Fourth Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS HOWARD A. CARTER Secretary

THE PRESENT STATUS OF FEVER THERAPY PRODUCED BY PHYSICAL MEANS

FRANK H. KRUSEN, M.D.

ROCHESTER, MINN.

During the past year, interest in the production of fever by physical means has greatly increased. More than a hundred articles on the subject have been written during 1935.

METHODS OF TREATMENT

Artificial fever has been induced by means of the following physical agents:

Radiant Heat—The air conditioned cabinet is the most recent development in this field. Although these cabinets do not produce a rise in bodily temperature by direct application of radiant heat to the surface of the body but rather by the heating of circulated air, which is blown over the body, they may still be classed as radiant heat devices. The hyperpyrexia is produced by the heated air. Much excellent clinical work has been done with this type of apparatus during the past year. The construction of this device has been described by various investigators.¹ The device is elaborate, requires a skilled team of workers for its operation and is not on the market at present. There are approximately fifty-five of these cabinets scattered throughout the country at various medical centers for purposes of clinical research.

Atsatt and Patterson² have described a device for the production of artificial fever by means of conditioned air, which they stated could be constructed by any competent hospital engineer at a cost that was considerably under \$100. They described this device in detail so that it can be reproduced by following their diagrams and description.

From the Section on Physical Therapy, the Mayo Clinic.
1. Krusen, F. H. A Recently Developed Method of Artificial Fever. Production by Physical Means. *M. Rec.* 140:248-250 (Sept. 5) 1934.
Kendall, Webb and Simpson. *Sittler*.
2. Atsatt, R. F. and Patterson, L. E. Fever Therapy Apparatus. *Arch. Physical Therapy* 18:108-110 (Feb.) 1936.

Luminous Heat Cabinets—Such cabinets have been used for the production of fever.³ These cabinets do not possess the features of air humidification and air circulation found in the previously mentioned cabinet Bishop, Lehman and Warren,³ who described the luminous heat cabinet, stated that "humidity control of the air in the radiant energy cabinet was investigated and was found to be of little benefit in the set-up described, especially in view of the complications that it imposed." It has been my experience, however, that the lack of proper humidification is somewhat of a disadvantage. There is one other disadvantage in this cabinet as described by the men who devised it, that is, the heat insulation of the cabinet is insufficient. Bishop, Lehman and Warren,³ however, stated that the radiant energy method described seemed to be the most convenient and economical method in their experience. They also stated that the cost of their cabinet was approximately \$150 and they gave an excellent description of its construction in their article.

It is likewise worth noting that Johnson, Osborne and Scupham⁴ believed that the ordinary electric light cabinet was the safest method for the production of artificial fever by physical means.

Nonluminous Heat Cabinets—There have been marketed by various manufacturers cabinets which somewhat resemble the one described by Bishop, Lehman and Warren,³ with the exception that the cabinets are heated by resistance heat coils somewhat similar to the coils found in the familiar household electric heater. Some of these devices have been humidified by means of a water trough within the cabinet. This method of humidification, however, is most unsatisfactory. None of these devices have yet been accepted by the Council on Physical Therapy as a satisfactory device for the production of fever.

Electric Blankets—Various kinds of electric blankets, frequently constructed somewhat like a large sleeping bag, have been used for fever therapy. They are less expensive than the cabinets, but a great disadvantage is that the patient is closely confined by the blanket. Kuhns,⁵ after four years of trial, expressed the opinion that the electric blanket is "the simplest and safest form of fever producing agent." These electric blankets, however, may be used satisfactorily only in those cases in which a fever of not over 103 to 104 F is required. For higher temperatures than this they are not at all satisfactory. The patients are made most uncomfortable by the close confinement of the blanket.

High Frequency Electrical Method—This method of treatment first described in 1929,⁶ is still being used, although it has been replaced to a certain extent by recently developed devices. The ordinary diathermy machine is used and large metal electrodes are applied to the patient's skin in such a manner that a large region of the body is traversed by the high frequency current. The patient is then covered by blankets or

placed in a sleeping bag or a heat cabinet to prevent dissipation of the heat produced in the body by the high frequency current.

Short Wave Diathermy—The short wave diathermy machine is somewhat similar to the conventional diathermy machine with the exception that the oscillations of current are much more rapid (conventional diathermy machines produce approximately 2,000,000 oscillations per second as compared to short wave diathermy machines, which may produce 100,000,000 or more oscillations per second). The heating of the body of the patient may be produced either by the induction coil or by the condenser plate method. With the induction coil method a coil of heavily insulated wire or ribbon is attached to the machine. This coil is either wound around the nude body of the patient or placed close to the surface of the patient's body in the form of a large pancake, and the patient is then heated by means of the high frequency electromagnetic field that is produced. Insulation of the patient's body is accomplished by means of blankets, a zipper bag or an insulated cabinet. One such method has been described by Kimble, Holmquest and Marshall.

With the condenser plate method essentially the same arrangement is used as with the induction coil technic, with the exception that the coil is replaced by two large condenser plates, which are placed on each side of the patient in such a manner that a large portion of the patient's body is within an electrostatic field between the plates. The body is then heated by the high frequency waves that pass between the two plates. Insulation of the patient's body is accomplished as previously mentioned.

One of the disadvantages of short wave diathermy is the tendency for the production of burning sensations on the moistened skin when the patient begins to perspire. In addition, when the patient assumes a posture in which two surfaces of the skin are touched together very lightly, burning is likely to occur at the site of contact. For this reason a number of investigators⁷ have abandoned the use of high frequency currents in favor of some form of external heat cabinet.

Hydrotherapeutic Methods—Hot Tub Baths. The production of fever with hot baths, which was described by Phillips in 1883, by Schamberg and Tseng in 1927, and by Mehrtens and Pouppirt in 1929, is still being used successfully by some investigators. Although prolonged hot tub baths are depressing, nevertheless the patient's temperature may be raised rather rapidly, and it may be maintained at a fairly high level for an hour or two by this method alone. The hot tub bath may be used to induce artificial fever, the fever being maintained, after induction, by means of blankets or a very simple radiant heat cabinet.

Hot Spray Baths—The nude patient may be placed in a horizontal position in a cabinet similar in external construction to the radiant heat cabinet and he may then be sprayed with a series of very fine jets of nebulized, very hot water, the temperature of which is controlled by means of a thermostat. Such a spray cabinet will produce a rapid rise in bodily temperature if the temperature of the water can be maintained at the proper degree. Difficulty may be encountered in maintaining the bodily temperature at the necessary high level in such a device.

³ Bishop, F. W., Lehman, Emmy and Warren, S. L., A Comparison of Three Electrical Methods of Producing Artificial Hyperthermia, J. A. M. A. 104: 910-915 (March 16) 1935.

⁴ Johnson, C. A., Osborne, Stafford and Scupham, George, Studies of Peripheral Vascular Phenomena, Am. J. M. Sc. 190: 425-491 (Oct. 1) 1935.

⁵ Kuhns, R. H., The Present Status of Fever Therapy for Dementia Paralytica in the State Hospitals of Illinois, Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, pp. 96-97.

⁶ Neymann, C. A., and Osborne, S. L., Artificial Fever Produced by High Frequency Current, Preliminary Report, Illinois M. J. 56: 199-200 (Sept.) 1929.

⁷ Kimble, H. E., Holmquest, H. J., and Marshall, J. G., Ectopyrexia with the Inductotherm, Physiotherapy Rev. 12: 14-16 (Jan. Feb.) 1935.

⁸ Kendall, H. W., Webb, W. W., and Simpson, V. M., Artificial Fever, Therapy of Gonorrheal Arthritis, Report of Thirty-One Cases, Am. J. Surg. 20: 429-435 (Sept.) 1935. Also see Lehman and Warren.

Conduction Heat Methods Other Than the Foregoing—Epstein and Cohen⁹ have devised a simple method of inducing hyperpyrexia by wrapping the patient in blankets and rubber sheeting. With this method no source of heat other than the natural heat radiation of the body is utilized. However a period of four or five hours is necessary simply to raise the temperature to 104° F, which would seem to subject the patient to an unnecessarily long period of discomfort before the required high temperature is achieved. If this method is to be used, it would seem expedient to use at least a few hot water bottles incorporated in the wrappings of the patient in order to make the induction of fever more rapid and to relieve the patient of several hours of unnecessary discomfort.

Hot Water Bottle and Blanket Method—Haddon and Wilson¹⁰ described this method which is still used quite frequently. The patient is simply wrapped in a number of thick blankets and surrounded by hot water bottles. The great disadvantage of any blanket method rests in the fact that nearly all patients are made extremely uncomfortable by the confinement of their limbs by the necessary tight wrapping of so many heavy coverings.

DISEASES TREATED

It is amazing to find that during the past year the use of fever produced by physical means has been recommended for no less than fifty different diseases. The results in the treatment of the majority of these diseases have not been encouraging, although for a selected few the method of treatment has given promise of great usefulness. In 1935 artificial fever produced by physical means was used in the treatment of the following conditions: adipositis dolorosa,¹¹ allergic dermatitis,¹² arteriosclerosis,¹¹ bacterial endocarditis (subacute),¹³ bronchial asthma,¹⁴ bronchiectasis,¹⁵ Burger's disease,¹⁶ cerebral atrophy (with chronic otitis media),¹⁷ chorea,¹⁸ chronic sinusitis,¹⁹ dermatitis herpetiformis,²⁰ epidemic encephalitis,²¹ epi-

lepsy,¹² "gallbladder infections,"¹¹ gonorrhea,²² gonorrheal arthritis,²³ gonorrheal corneal ulcer,²⁴ gonorrheal endocarditis,²⁵ gonorrheal epididymitis,²⁶ gonorrheal prostatitis,²⁷ gonorrheal salpingitis,²⁸ gonorrheal urethritis,²⁷ pelvic inflammatory disease,²⁹ "hepatic infections,"¹¹ Hodgkin's disease,¹² infectious arthritis,³⁰ interstitial keratitis,³¹ iritis (subacute),³² multiple sclerosis,³³ mycosis fungoides,³⁴ optic atrophy,¹¹ osteogenic sarcoma,³⁵ osteomyelitis,¹⁷ Parkinson's syndrome,³⁶ peripheral vascular disease,³⁷ psoriasis,³⁸ psychoses,³⁹ pyelitis,⁴⁰ radiculitis,¹¹ Raynaud's disease,¹¹ rheumatic fever,¹⁰ sciatic neuritis,¹⁰ scleroderma,⁴¹ septicemia (staphylococcal),¹⁷ syphilis,⁴² syphilitic meningitis,¹¹ ocular syphilis,⁴³ syphilis of the nervous system,⁴⁴

9 Epstein A. N. and Cohen, Maurice. The Effects of Hyperpyrexia Produced by Radiant Heat in Early Syphilis with a Description of a Simple Method of Producing Hyperpyrexia. *J. A. M. A.* 104: 883-889 (March 16) 1935.

10 Haddon S. B. and Wilson George. Thermic Treatment of Neurosyphilis. *Pennsylvania M. J.* 36: 829-831 (Aug.) 1933.

11 Rogers J. C. Some Further Studies and Observations of Hyperthermia (Fever Treatment) Cases. *Kentucky M. J.* 33: 149-151 (March) 1935.

12 Desjardins A. L. and Popp W. C. Our Experience with Fever Therapy. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 7-8.

13 Simmons E. E. Some Unusual Cases Treated with the Kettering Hypertherm. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 20-21. Freund and Watts.

14 Sheldon J. J. Results of Fever Therapy in Intrinsic Intractable Asthma. Preliminary Report. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 83-85. Rogers, Desjardins and Popp, Hefke.

15 Bennett A. and Austin J. Simmons.

16 Rogers, Desjardins and Popp, Ebaugh, Barnacle and Ewalt.

17 Ebaugh F. C. Barnacle, C. H. and Ewalt J. R. Experience with Fever Therapy at the University of Colorado School of Medicine and Hospitals. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. p. 17.

18 Schnabel T. C. and Fetter Ferdinand. Fever Therapy in Gonorrheal Arthritis and Chorea. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 36-37.

19 Hoverson E. T. The Use of the Electric Cabinet as the Source of Heat for the Production of Artificial Fever in the Treatment of General Paresis and Chorea. *ibid.* pp. 97-98. Sutton, Lucy P. and Dodge Katherine G. The Effect of Fever Therapy on Rheumatic Carditis Associated with Chorea. *J. Pediatr.* 6: 494-511 (April) 1935.

20 Neymann C. A. Treatment of Disease by Means of Electropexy. *Proc. Roy. Soc. Med.* 29: 151-162 (Dec.) 1935.

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22 Bennett A. E. and Austin Bruce. Preliminary Report of the University of Nebraska Research Project. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 23-24.

23 Alderson H. E. Fever Therapy in Dermatitis Herpetiformis. *Arch. Dermat. & Syph.* 32: 468-469 (Sept.) 1935.

24 Desjardins and Popp, Bennett and Austin, Ebaugh, Barnacle and Ewalt.

22 Hench P. S. A Clinic on Some Diseases of Joints. I. Gonorrheal Arthritis. Results of Fever Therapy. II. Acute Postoperative Arthritis. Its Identification. III. Acute Postoperative Gout. Its Treatment and Prevention. IV. The Inactivating Effect of Jaundice in Chronic Infectious (Atrophic) Arthritis and Fibrositis. *M. Clin. North America* 19: 551-581 (Sept.) 1935. Desjardins and Popp, Ebaugh, Barnacle and Ewalt. Book. Carpenter and Warren.

23 Hench P. S. Slocumb C. H. and Popp W. C. Results of Fever Therapy for Gonorrheal Arthritis. Chronic Infectious (Atrophic) Arthritis and Other Forms of "Rheumatism." Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 9-13. Kendall H. W. and Webb W. W. Artificial Fever Therapy of Gonorrheal Arthritis. Report of Thirty One Cases. *ibid.* pp. 108-110. Stecher R. M. Results of Fever Therapy in Acute and Chronic Arthritis. *ibid.* pp. 13-14. Rogers, Anderson, Arnold and Trautman, Schnabel and Fetter, Peck, Egan and Piaskoski.

24 Hench, Hench Slocumb and Popp.

25 Whitney E. L. Artificial Fever Therapy in the Treatment of Corneal Ulcer and Acute Iritis. *J. A. M. A.* 104: 2017-2019 (May 18) 1935. Metz, Simpson.

26 Bierman William and Horowitz E. A. Gonococcal Infection in the Female Treated by Means of Combined Systemic and Additional Pelvic Heating. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 30-31.

27 Egan W. J. and Piaskoski Ray. A Preliminary Report on Early Experiences with the Kettering Hypertherm at the Milwaukee County Hospital. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 62-63. Anderson, Arnold and Trautman.

28 Desjardins A. L. Stuhler J. G. and Popp W. C. Fever Therapy for Gonococcal Infections. *J. A. M. A.* 104: 873-878 (March 16) 1935. Anderson, Arnold and Trautman.

29 Egan and Piaskoski, Bierman and Horowitz.

30 Huber C. P. Fever Therapy in Gynecology. A Preliminary Report of Immediate Results. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 81-82. Hefke, Metz, Ebaugh, Barnacle and Ewalt, Bierman and Horowitz, Desjardins, Stuhler and Popp.

31 Hench P. S. Clinical notes on the results of fever therapy in different diseases. *Proc. Staff Meet. Mayo Clin.* 10: 662-666 (Oct. 16) 1935. Tenney C. F. and Snow W. B. Therapeutic Effects of Electrically Produced Fever in the Treatment of Arthritis. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 46-51. Short and Bauer, Desjardins and Popp, Hefke, Peck, Ebaugh, Barnacle and Ewalt, Hench, Slocumb and Popp (footnotes 23 and 72). Stecher.

32 Metz, M. H. Some Unusual Cases Treated with Fever Therapy. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 101-103. Peck, Culler.

33 Bennett and Austin, Whitney.

34 Neymann C. A. L'emploi de l'électropexy dans le traitement des maladies. *Liege med.* 28: 641-664 (June 9) 1935. Desjardins and Popp, Bennett and Austin, Hefke.

35 Klauder J. V. Fever Therapy of Mycosis Fungoides. *J. A. M. A.* 106: 201-205 (Jan. 18) 1936. Peyri Jacques. Quelques commentaires à notre casistique de mycosis fungoides. *Ann. de dermat. et de syph.* 6: 481-495 (June) 1935. Desjardins and Popp.

36 Doub H. P. Osteogenic Sarcoma Treated with Radiation and Fever Therapy. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 77-78.

37 Rogers, Hefke, Riesman.

38 Freund H. A. and Watts, F. B. The Treatment of Peripheral Vascular Disease by Means of Hyperpyrexia. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 85-86.

39 Peck W. S. Organization of Fever Therapy Studies at the University Hospital. University of Michigan. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 78-80. Rogers.

40 Bennett and Austin, Simmons.

41 Hefke H. W. Report on the First Year of Fever Therapy at the Milwaukee Hospital. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 29-30.

42 Desjardins and Popp, Metz.

43 Krusen F. H. Therapeutic Fever with High Frequency Current in Treatment of Syphilis. *Physiotherapy Rev.* 12: 288-289 (Nov-Dec) 1932. Epstein and Cohen, Simpson, Tenney and Snow.

44 Culler A. M. Artificial Fever Therapy of Ocular Syphilis. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio May 2 and 3 1935. pp. 105-106.

45 Gordon R. G. and Gerhard, Jacoby. General Paresis. Treatment with Diathermy. *Delaware State M. J.* 7: 102-104 (May) 1935. Meninger W. C. Juvenile Paretic Studies. *Am. J. Syph. & Neurol.* 19: 257-271 (April) 1935. Nelson O. L. Diathermy in the Treatment of Neurosyphilis. *M. Bull. Vet. Admin.* 11: 223-238 (Jan.) 1935. Kuhns, Simmons, Hefke, Ebaugh, Barnacle and Ewalt, Hoverson, Egan and Piaskoski, Simpson, Hunsie and Blalock, Solomon and Epstein, Cullins, Morgan and Seymour.

trichinosis,⁴⁵ tuberculosis,⁴⁶ tumors⁴⁷ and undulant fever⁴⁸

I wish to emphasize most strongly that it is probable that fever therapy is of little or no value in the treatment of a number of these diseases and that in some diseases mentioned it is distinctly dangerous to attempt fever therapy. Studies during the past year have added to our information concerning the use of artificial fever in some diseases.

Subacute Bacterial Endocarditis (Endocarditis Lenta)—Studies⁴⁹ have demonstrated very definitely that, although there was apparently some slight temporary relief of pain and lowering of temperature following artificial fever therapy, no permanent beneficial effects were noted in any case. Because of the presence of soft vegetations on the endocardium, the very marked increase in blood velocity produced by fever therapy apparently increases the danger of embolism. Either cerebral embolism or generalized embolism may occur. Freund and Watts⁴⁹ have demonstrated definitely that *Streptococcus viridans* can resist the very highest temperature that the human body can tolerate. These results constitute a warning to abandon any further attempt to use fever therapy in subacute bacterial endocarditis.

Bronchial Asthma—Studies⁵⁰ indicate that in a total of at least 117 cases the results were favorable in 104 cases, unfavorable in ten cases and slight or indifferent in at least three other cases. These results would seem to indicate that well equipped hospital fever therapy departments are justified in continuing to administer fever therapy to patients who have intractable bronchial asthma which has failed to respond to all other means of treatment. However, the beneficial results are frequently merely temporary and in some instances no improvement can be expected. Because of the severity of the treatment, fever therapy should not be attempted unless all other means have failed. In no instance should fever therapy be attempted as an office procedure.

Chorea—Reports⁵¹ indicate that, of approximately thirty patients, eight have been classed as "cured," seven as markedly improved, eleven as improved, none as unimproved, and in four or more cases the results have not been reported. The total number of such cases is too small for one to draw any final conclusions. It would seem that none but well equipped institutions which are conducting studies on the effects of artificial fever therapy should attempt to use this method of treatment until further studies have been presented.

Gonococcal Infections—Studies⁵² indicate that in 187 cases of gonorrhea approximately 121 patients

were clinically "cured" and twenty-eight were improved. In four cases results were not reported. These figures seem to be startlingly good. Despite the severity of this type of treatment, its use by properly organized teams of workers in well equipped institutions seems justified in cases in which there is no contraindication to fever therapy.

Gonorrheal Arthritis—Studies⁵³ reveal that, with one exception, all investigators reported startlingly good results in the treatment of gonorrheal arthritis with artificial fever by physical means. These early reports reveal that after treatment with artificial fever 70 per cent of the patients who had gonorrheal arthritis were symptom free, an additional 10 per cent were markedly relieved, and the other 20 per cent were unimproved. The studies indicate that the earlier in the course of the arthritis the treatment is given the greater is the opportunity for complete subsidence of the infection and for nearly complete restoration of articular function.

Gonorrheal Complications Other Than Arthritis—Studies on gonorrheal corneal ulcer,⁵⁴ gonorrheal endocervicitis,⁵⁵ gonorrheal prostatitis,⁵⁶ gonorrheal salpingitis⁵⁷ and gonorrheal pelvic inflammatory disease⁵⁸ indicate that if proper technic is employed these complications will respond favorably to prolonged, high artificial fevers.

Infectious Arthritis—The work of various investigators⁵⁷ shows that about 30 per cent of the patients with infectious arthritis who were treated with artificial fever were significantly improved and that about 70 per cent showed little if any improvement.

Multiple Sclerosis—Several investigators⁵⁹ reported the treatment of this condition with induced fever. The results were for the most part unfavorable but the number of cases reported is insufficient to permit the drawing of any final conclusions.

Mycosis Fungoides—Reports⁶⁰ signify that, in ten cases of mycosis fungoides in which artificial fever therapy was employed, moderate and temporary improvement was noted in eight. In one case the treatment had to be discontinued because of an intercurrent, severe herpes zoster, and in another case the treatment was "of no avail."

Parkinson's Syndrome—Hefke⁴⁰ and Rogers¹¹ reported the treatment of this condition with fever therapy, and Schmidt⁶⁰ had previously advocated fever therapy for the treatment of the postencephalitic type of this syndrome. It would probably be best to heed the statement of Riesman,⁶¹ namely, that "fever therapy in the form of diathermy or malarial or bacterial injections seems to produce no permanent benefit. It may even do harm."

45 Krusen F H. Studies of the Blood Picture Before and After Fever Therapy. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 91-96.

46 Benjamin J E. One Year's Experience in the Use of the Kettering Hypertherm at the Cincinnati General Hospital. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 99-100. Major P C, Doub H P and Hartman F W. The Effect of Accurately Controlled Artificial Fever on Acute Tuberculosis. *Ibid.* pp. 63-66. Metz²¹, Duncan and Mariette⁶¹.

47 Warren S L. Study of Effect of Artificial Fever in Hopeless Tumor. *Can. J. Am. J. Roentgenol. & Radium Therap.* 33: 75-87 (Jan.) 1935. Doub²¹.

48 Simmons¹¹, Prickman and Popp¹².
49 Freund H A and Watts F B. The Treatment of Subacute Bacterial Endocarditis with Excise Hyperpyrexia. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 86-87.

50 Desjardins and Popp¹², Hefke⁴⁰, Phillips and Shikany¹⁰, Sheldon¹¹.

51 Desjardins and Popp¹², Schnabel and Fetter¹⁴, Metz²¹, Hoover¹⁵, Sutton and Dodge¹⁶, Neumann¹⁷, Weichler¹⁸.

52 Warren S L, Carpenter C M and Boak Ruth A. The Basic Principles for the Cure of Gonococcal Infections by a Single Fever Treatment. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 5-6. Desjardins and Popp¹², Boak, Carpenter and Warren.⁴

53 Hench P S. Clinical Notes on the Results of Fever Therapy in Different Diseases. Report of the Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. *Minnesota Med.* 10: 151-156 (March) 1936. Strickler C W Jr. Results of Treatment of Arthritis with Fever Therapy. A Preliminary Report. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 81-82. Kendall Webb and Simpson¹, Anderson Arnold and Trautman¹, Schnabel and Fetter¹⁴, Hench⁵³, Hench Slocumb and Popp (footnotes 23 and 72), Kendall and Webb²¹.

54 Metz²¹, Whitney²¹.

55 Anderson T B H, Arnold R C and Trautman J A. The Treatment of Gonococcal Infections in the Male with Pyretolther. Abstract Papers and Discussions. Fifth Annual Fever Conference. Dayton, Ohio, May 2 and 3, 1935. pp. 33-34.

56 Bierman and Horowitz²¹, Huber²¹.

57 Short, C L and Bauer²¹, Walter²¹. Treatment of Rheumatoid Arthritis with Fever Induced by Diathermy. *J. A. M. A.* 103: 2194-2198 (May 18) 1935. Hefke⁴⁰, Hench Slocumb and Popp¹², Strickler⁵³.

58 Desjardins and Popp¹², Tenney and Snow²¹.

59 Desjardins and Popp¹², Bennett and Austin¹¹, Hefke⁴⁰, Clayton¹¹, Klauder¹¹, Fey¹¹.

60 Schmidt W H. Fever Therapy and Other Recent Developments in Physical Therapy. *New England J. Med.* 200: 419-425 (Aug. 31) 1933.

61 Riesman David. Encephalitis Lethargica with Report of Case. *Ann. Surg.* 101: 303-312 (Jan.) 1935.

Syphilis (Early)—Studies⁶² indicate that artificial fever therapy combined with chemotherapy affords better results than can be obtained with the use of either one alone. Simpson⁷⁰ advocates the use of fever therapy in the treatment of primary syphilis as well as in the later stages. In a recent article, Neymann and others⁶³ have discussed pertinent the value of artificial fever by physical means. In the late stages of syphilis most of the studies have been made on the usefulness of fever therapy in the treatment of syphilis of the nervous system and in the treatment of ocular syphilis.

Ocular Syphilis—Studies⁴³ indicate that the combined fever-chemotherapy technic of Simpson is of considerable value in the treatment of some forms of ocular syphilis, particularly interstitial keratitis, syphilitic exudative uveitis and choroiditis.

Syphilis of the Nervous System—Reports⁶³ indicate that fever produced by physical means may be used successfully in the treatment of dementia paralytica, tabes dorsalis and other forms of syphilis of the central nervous system. The studies suggest that physical methods of creating fever produce results somewhat comparable to those obtained with malarial therapy. The data, however, are still insufficient to permit one to draw final conclusions.

Tuberculosis—Investigations⁶⁴ indicate that artificial fever should be employed with the greatest of care even in experimental studies. There is great danger of doing injury to the patient if fever therapy is used in this disease and the study of this phase of treatment of tuberculosis should, for the present, remain entirely in the hands of research groups.

Undulant Fever—Prickman and Popp⁶⁵ have noted rather striking response to fever therapy in three patients who had undulant fever. I have recently treated a fourth patient who has shown a sudden and very spectacular remission of the chills and fever following three sessions of high fever artificially produced. The number of patients is insufficient for one to draw any final conclusions with regard to this disease.

Conclusions with Regard to Diseases Treated—The studies which have been made during the last year indicate that the chief sphere of usefulness of this form of therapy lies in the treatment of gonorrhea, both acute and chronic, and its complications. It would appear that it may be of value in the treatment of syphilis in its various manifestations, particularly when fever therapy is combined with chemotherapy. While there is a suggestion that artificial fever produced by physical means may be helpful in the treatment of intractable bronchial asthma in selected cases of chronic infectious arthritis, chorea and undulant fever, nevertheless clinical data are not sufficient to permit any final conclusions. Its value in about forty other dis-

eases remains to be proved. It seems to offer promise of considerable usefulness as a therapeutic agent particularly in the treatment of gonorrhea.

EFFECTS

A summary of the numerous studies on the effects of fever produced by physical means indicates that the following changes are produced.

Bactericidal Effects—*Neisseria gonorrhoeae* generally is destroyed at a temperature of from 106 to 107 F in from six to twenty-seven hours⁶⁶. In a high percentage of cases of syphilis, darkfield illumination will fail to reveal the presence of *Spirochaeta pallida* after the patient has been treated with fever induced by physical means⁹. Following exposure to temperatures within physiologic ranges, no cultural changes, in vitro, are noted in *Mycobacterium tuberculosis*, *Streptococcus haemolyticus* or *Streptococcus mitior*⁶⁷. The last named organism appears to resist, in vivo, any degree of heat possible for the human body to tolerate⁴⁹. *Micrococcus catarrhalis*, *Haemophilus conjunctivitis*, *Haemophilus influenzae*, *Brucella abortus*, *Escherichia coli*, *Eberthella typhosa*, *Streptococcus haemolyticus*, *Streptococcus viridans* and *Diplococcus pneumoniae* (type 1 and type 3) usually resist in vitro temperatures of 107 F for a period of twenty-four hours, an occasional strain shows some reduction in numbers⁶⁸.

Effects on Circulatory System—The pulse rate and circulatory rate are increased⁶⁹. The minute volume output of the heart is increased and the velocity of the blood may be increased as much as 400 per cent⁷⁰. There is an initial increase followed by a decrease in the blood pressure and a decrease in pulse pressure¹². There is a marked increase in the pulse volume changes of the fingers in all types of artificial fever, with the exception of fevers caused by foreign protein. It has been suggested that the vasodilatation which occurs during fever produced by foreign protein is possibly of central origin, while the vasodilatation which occurs in artificial fever induced by external heat with a consequent prevention of heat loss is chiefly of peripheral origin. The maximum increase of circulation in artificial fever occurred in general at temperatures between 103 and 104 F⁴. Alterations in the electrocardiogram are not uniform. While the amplitude of the contractions is decreased, it cannot be inferred that fever therapy has any harmful effect on the heart⁷¹. There is no change in the volume, or only a slight concentration of the blood, and no change occurs in the viscosity of the blood when the intake of fluids is encouraged⁷². The visible capillaries of the nail beds are increased in number and size. The erythrocyte count generally is not changed⁷². An initial decrease and a subsequent increase occur in the number of

66 Boak, Ruth A., Carpenter, C. M. and Warren, S. L. The Thermal Death Time of 130 Strains of *Neisseria Gonorrhoeae*. Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, p. 5.

67 Duncan, G. R., and Mariette, E. S. Report on Artificial Hyperpyrexia in Tuberculosis as Carried Out at Glen Lake Sanatorium, Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, pp. 12.

68 Thompson, Luther Sheard, Charles and Larson, Nora. The Effect of Heat at 107 F. (41.8 C.) on Various Bacteria. Proc. Staff Meet. Mayo Clin. 11, 319 (May 13), 1936.

69 Phillips, Kenneth and Shikany, S. The Value of Hyperpyrexia in the Treatment of Bronchial Asthma. South. M. J. 28, 801-814 (Sept.), 1935.

70 Simpson, W. M. Artificial Fever Therapy of Syphilis. Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, pp. 110-114.

71 Bierman, William and Vesell, Harry. The Electrocardiogram in Fever. Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, pp. 32-33.

72 Hench, P. S., Slocumb, C. H. and Popp, W. C. Fever Therapy Results for Gonorrheal Arthritis, Chronic Infectious (Atrophic) Arthritis and Other Forms of Rheumatism. J. A. M. A. 104, 1779-1790 (May 18), 1935.

62 Neymann, C. A., Lawless, T. K. and Osborne, S. L. Treatment of Early Syphilis by Electropexia. J. A. M. A. 107: 194-200 (July 18), 1936. Epstein and Cohen.⁶³ Simpson.⁷⁰

63 Hinsie, L. E. and Blalock, J. R. Treatment of General Paresis with Combined Electropexia and Trypanamide. Abstract Papers and Discussions, Fifth Annual Fever Conference, Dayton, Ohio, May 2 and 3, 1935, pp. 26-29. Solomon, H. C., and Epstein, S. H. Experiments with Trypanamide, Malaria and Diathermy. Ibid. pp. 35-36. Cullins, J. G., Morgan, H. P. and Seymour, W. Superdiathermy in Treatment of Dementia Paralytica. M. Bull. Vet. Admin. 11, 217-223 (Jan.), 1935. Kubna.⁶⁴ Simmons.¹³ Hefke.⁶⁵ Hoverson.¹⁸ Egan and Piaskoski.²⁹ Simpson.⁷⁰ Gordon and Gerbard.⁴¹ Menninger.⁴⁴ Nelson.⁴⁴

64 Metz.²¹ Benjamin.¹⁶ Duncan and Mariette.⁶⁷ Major, Doub and Hartman.⁴⁵

65 Prickman, L. E. and Popp, W. C. Treatment of Brucellosis by Hyperpyrexia Induced by the Simpson Kettering Hypertherm. Proc. Staff Meet., Mayo Clin. 11: 506-510 (Aug. 5), 1936.

leukocytes⁷² There is a relative and an absolute decrease in the number of lymphocytes⁷³ The hematopoietic response is characterized by consistent leukocytosis, with delivery of polymorphonuclear neutrophils of increasing immaturity Destruction of lymphocytes occurs and there is probably some destruction or redistribution of monocytes A shift of the neutrophilic granulocytes to the left and the presence of clasmato-cytes in the peripheral blood (which are outstanding in malaria) are not seen in cases in which fever is produced by physical means⁷⁴

There is no change in the nitrogenous constituents (urea, uric acid, creatinine) or there may be slight increase (if there is an increase in the concentration of the blood)⁷⁵ There is nearly consistent increase in the creatinine clearance, in contrast to wide variations which occur in infections⁷⁶ There is no change in the nonnitrogenous constituents (sugar, phosphorus lipids, calcium) or only a slight increase (if there is an increase in the concentration of the blood)⁷⁷ No significant decrease occurs in the lipids of the plasma, such as is seen in acute infections⁷⁸ There probably is an alteration in the acid-base balance of blood in the direction of slight alkalosis⁷⁹ Marked alkalosis may be noted⁸⁰ Opinions vary as to the effect on the chlorides, some writers say that there may be marked decrease,⁸¹ while others say that there is no significant change⁸² If salt or weak saline solution is administered by mouth during treatment, the blood chlorides drop very little If no sodium chloride is administered and sweating is profuse, a drop in the blood chlorides is to be expected The oxygen content and oxygen combining power of venous blood are increased⁸³ Opinions also vary as to the effect on the agglutinins, but the agglutination titer generally is within normal limits⁸⁴ The complement fixing antibodies are temporarily diminished, but there is no change in the opsonic index⁸⁵

Other Effects—Examination of the gastric contents reveals a sudden decrease in the amount of chlorides and an increase in the amount of lactic acid⁸⁶ The urine is increased in amount but temporary oliguria generally occurs⁸⁷ The reaction of the urine is unchanged, or the urine is slightly alkaline and its specific gravity is increased⁸⁸ The basal metabolic rate is increased approximately 7 per cent for each degree of fever induced⁸⁹ Cold fluids, taken by mouth, produce fluctuations in the gastric temperature but do not appreciably affect the general temperature⁹⁰ Comparison of temperatures in the median antibrachial vein, rectum uterine cervix, Hunter's canal, bladder

and spinal canal indicate that records of the rectal temperature provide an accurate index of the temperature of the deep tissues⁹¹ After each individual treatment there may be a temporary loss of weight due to loss of fluid (unless sufficient fluids are taken by mouth) However, this loss is quickly regained and, after a course of fever therapy, a patient usually retains his original weight or even gains weight

PATHOLOGIC CHANGES

Hemorrhagic encephalitis has occurred in some instances, and hemorrhagic pneumonia also has been noted Deterioration and hemorrhage may occur in the cortex of the adrenal glands Death may occur as the result of vascular collapse Since both fever therapy and sodium amytal (which is frequently used as a sedative in fever therapy) tend to produce marked dilatation and engorgement of the blood vessels, it is suggested that the combination should not be used⁹² In tuberculous animals, marked hemorrhages may occur in tuberculous lesions Tuberculous lesions are more extensive among animals that have been treated with induced fever than they are among animals that have been used as controls⁹³ In subacute bacterial endocarditis there is apparently danger that fever therapy may produce multiple emboli⁹⁴

TECHNIC

Studies during the past year have emphasized the facts previously stressed by the Council on Physical Therapy, namely, that production of fever by physical means is strictly a hospital procedure, that it is essential that a well trained personnel be in complete charge of the work, that skilful nurse technicians, who have had at least one month's supervised training, administer the treatments, and that a physician be in constant attendance Patients to be treated with fever should be selected with as much care as are patients who are to undergo a major surgical operation

The dangers that have been mentioned—of emboli hemorrhages and sudden death—are extremely rare when the administration of the fever treatments is in the hands of a competent, well organized group However, there is certain to be a very slight mortality with a treatment as heroic as this If these treatments are given without proper control or are considered as simple office procedures, there is danger of harm to the patient or even death

Opinions vary as to the best and safest physical means of producing fever Almost any one of the methods described in this article may be used with the confidence that it will produce favorable results provided the team of workers who are using it have developed a good technic for the particular method

It would seem quite apparent that, for the present the medical profession as a whole should avoid the use of fever therapy unless there is available an institution properly equipped to administer this type of treatment

The controversy still goes on concerning the effectiveness of fever produced by physical means as compared to fever produced by malarial inoculations or by injections of foreign protein It is not the purpose of this article to enter into this controversial phase of the subject It would seem from a clinical standpoint that the production of artificial fever by physical means offers certain factors of control and safety which make it appear preferable in some instances to the production

73 Krusen ⁴⁵ Hargraves and Doan.⁷⁴
74 Hargraves M. M. and Doan, C. A. The Physiologic Response of the Hemopoietic Tissues to Artificially Induced Fever Abstract Papers and Discussions Fifth Annual Fever Conference Dayton Ohio May 2 and 3 1935 pp 51-58.

75 Grant W. H. and Medes Grace Creatinine Clearance During Hyperthermia of Diathermy and Fevers J Lab & Clin Med. 20 345 349 (Jan.) 1935

76 Stoesser A. V. and McQuarrie Irvine Influence of Acute Infection and Artificial Fever on Plasma Lipids Am J Dis. Child 49: 658 671 (March) 1933

77 Danielson W. H. and Stecher R. M. Acid Base Balance of Blood in Hyperthermia Proc. Soc. Exper Biol. & Med 32 1015 1016 (April) 1935

78 Lepore M. J. Chloride and Water Metabolism in Patients with Artificial Fever Abstract Papers and Discussions Fifth Annual Fever Conference Dayton Ohio May 2 and 3 1935 pp. 38-39

79 Desjardins and Popp.⁸⁰ June, Ruth W. Immunologic Studies in Hyperpyrexia Arch Physical Therapy 16 397-404 (July) 1935

81 Hadjopoulos L. G. and Bierman, William Effects of Hyperthermia Induced by Physical Means upon Complement Fixing Antibodies J Lab. & Clin. Med. 20 227-230 (Dec.) 1934

82 Phillips and Shikany.⁸³ Hench, Slocumb and Popp.⁸⁴

83 Phillips and Shikany.⁸⁴ Egan and Piskoski.⁸⁵

84 Sittler E. C. The Kettering Hyperthermia Abstract Papers and Discussions Fifth Annual Fever Conference Dayton Ohio May 2 and 3 1935 pp 114-117

85 Hartman F. W. and Major R. C. Pathological Changes Resulting from Accurately Controlled Artificial Fever Am J Clin. Path. 5 392-410 (Sept.) 1935

of fever by malarial inoculations or by injections of foreign protein. Likewise, clinical observations would indicate that in the treatment of disease by these two methods the results obtained are somewhat comparable.

COLLINS VASCULATOR ACCEPTABLE

Manufacturer: Warren E. Collins, Inc., Boston

The Collins Vasculator, according to the manufacturer, provides a convenient means of applying alternate suction and pressure in the treatment of peripheral vascular disease. The essential parts of this device are the pump, the motor, and the boot or chamber.

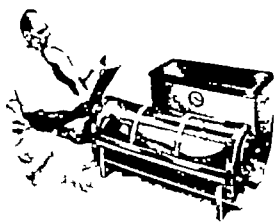
A rotary pump supplies both positive and negative pressures and is driven by a V-belt connected to a one-quarter horse power electric motor, which is supplied for either alternating or direct current. A valve, operated by a cam alternatively connects the suction and pressure outlets of the pump to an air duct leading to outlets at the rear of the cabinet. The cam which establishes the timing of the pressure changes is driven by a reduction gear connected to the pump shaft by a V-belt, and makes one revolution in approximately thirty seconds. The cam operates a lever which causes the valve to connect the air duct to the suction side of the pump for approximately twenty-five seconds and to the pressure side for five seconds. Other combinations are available.

Connected to the air duct is the pressure indicating gage which is mounted on the front of the cabinet. The gage is calibrated in millimeters of mercury and indicates accurately both suction and pressure.

Also connected to the duct are two control valves, one of which regulates the pressure, the other the suction. Each valve is provided with spring tension varied by a screw to which the control knob is attached. A stop on the adjusting screw limits the amount of tension applied to the spring and, accordingly, the maximum amount of suction or pressure in the air duct, outlet manifold, and treatment chamber. These valves therefore perform the function of conventional safety valves," as well as regulating the pressures.

The mechanism is assembled on a steel chassis which is mounted in the cabinet on rubber mountings, to minimize the transmission of vibration and mechanical noise. The Vasculator cabinet is made of steel, with hinged cover which affords access to the control valves and also the mechanism. The cabinet is 30 inches high, 26 inches wide and 15 inches deep and is mounted on rubber-tired ball bearing casters. The interior is lined with sound absorbing material.

The treatment chamber or boot is constructed of steel and is approximately 30 inches long, 14 inches high and 12 inches wide. The upper half is provided with a window of heavy-gauge cellulose acetate. At one end is an opening through which the leg or arm to be treated is inserted. The opening is rendered air tight during treatment by means of rubber cuffs mounted on aluminum rings, which are clamped to the end of the boot. The cuffs are supplied in a total of eight graduated sizes ranging from



Collins Vasculator

3½ inches to 7 inches in diameter. The mounting ring for each cuff is marked with the circumference of the cuff, enabling fitting by measuring the arm or leg with a tape measure at the point where the cuff is to be applied.

The Vasculator is provided with outlets for the operation of two boots. These are connected to the apparatus by rubber hose, tapered outlets being provided for its attachment.

The motor requires an electrical input of between 300 and 400 watts, depending on the load, which varies somewhat with the individual pressure variations as well as with the pressure adjustment.

Some indications for the use of this type of apparatus appear to be acute vascular occlusion, freezing, and vascular diseases with major involvement of the large vessels. Contraindications appear to be thrombophlebitis, cellulitis or lymphangitis (acute

or subacute) extensive destruction of the arteriolar or capillary vessels, advanced thrombo-angitis obliterans with capillary stasis and advanced arteriosclerosis with capillary stasis, and venous thrombosis.

This apparatus has a very limited field of usefulness and probably therefore does not belong in the armamentarium of the average physician. It belongs rather in the realm of hospital equipment, since most of these rare arterial diseases are hospital cases.

In view of the satisfactory performance of this unit with reference to the treatment of acute vascular occlusion, freezing and vascular diseases with major involvement of the large vessels, the Council on Physical Therapy voted to include the Collins Vasculator in its list of accepted apparatus.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

Nomenclature of Endocrine Principles III

THE PRESENT UNSETTLED STATE OF ENDOCRINOLOGIC NOMENCLATURE HAS BEEN THE CAUSE OF INCREASING CONFUSION IN RECENT YEARS. IN AN EFFORT TO REMEDY THIS DEPLORABLE SITUATION THE COUNCIL SOLICITED THE COOPERATION OF A NUMBER OF EXPERTS WHO HAVE MADE FUNDAMENTAL CONTRIBUTIONS TO GLANDULAR PHYSIOLOGY. THIS GROUP TERMED THE ADVISORY COMMITTEE ON THE NOMENCLATURE OF ENDOCRINE PRINCIPLES IS COMPOSED OF THE FOLLOWING: DR. EDGAR ALLEN, WILLARD M. ALLEN, J. B. COLLIP, G. W. CORNER, E. A. DOISY, E. T. ENGLE, H. M. EVANS, R. T. FRANK, F. L. HISAW, F. C. KOCH, LEO LOEB, G. F. MARRIAN, C. R. MOORE, OSCAR RIDDLE, P. E. SMITH, AND C. W. TURNER. M. S. BISKIND, CORRESPONDING SECRETARY. ON THE RECOMMENDATION OF THIS COMMITTEE THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT WHICH IS THE THIRD OF A SERIES. THE PRECEDING REPORTS APPEARED IN THE JOURNAL MAY 23, 1936, PAGE 1808, AND JULY 18, 1936, PAGE 210. IT IS ANTICIPATED THAT ANOTHER REPORT ON A RELATED TOPIC WILL BE PUBLISHED IN THE NEAR FUTURE.

THE COUNCIL DESIRES TO EXPRESS ITS SINCERE APPRECIATION TO THE MEMBERS OF THE ADVISORY COMMITTEE FOR THEIR WILLING COOPERATION.

PAUL NICHOLAS LEECH, Secretary

THE NOMENCLATURE OF ESTRUS-PRODUCING COMPOUNDS

Crude extracts of ovary and placenta which produced uterine growth were obtained by Adler¹ (1912), Iscovesco² (1912), Fellner³ (1912), Herrmann⁴ (1915) and others. Using a similar biologic reaction, Robert Frank⁵ (1922) made the significant discovery that liquor folliculi also contains an active substance. However, the chemical work leading to purification and isolation did not progress rapidly, owing primarily to the difficulties of assay, but with the introduction of Allen's rapid vaginal smear method (Allen and Doisy,⁶ 1923) based on the phenomenon described by Stockard and Papanicolaou, investigation of the follicular hormone became very active. Among the subsequent contributions leading to the isolation of pure crystalline estrogenic compounds, the discovery of Aschheim and Zondek⁷ (1927) of the estrus-producing property of the urine of pregnant women was, perhaps, the most important.

The first crystalline estrogenic compound was isolated by Doisy, Veler and Thayer⁸ in 1929, shortly after this discovery was announced. Butenandt⁹ (1929) reported the isolation of

1 Adler L. Zur Physiologie und Pathologie der Ovarialfunktion. Arch f. Gynak. 95: 349, 1912.

2 Iscovesco H. Les lipides de l'ovaire. Compt. rend. Soc. de biol. 73: 16, 1912. Les lipides utero-stimulant de l'ovaire. ibid. 73: 104, 1912.

3 Fellner O. Experimentelle erzeugte Wachstumsveränderungen am weiblichen Genitale der Kaninchen. Zentralbl. f. allg. Path. u. path. Anat. 23: 673, 1912.

4 Herrmann E. Ueber eine wirksame Substanz im Eierstocke und in der Placenta. Monatschr. f. Geburtsh. u. Gynak. 41: 1, 1915.

5 Frank R. T. The Ovary and the Endocrinologist. J. A. M. A. 78: 181 (Jan. 21), 1922.

6 Allen Edgar and Doisy E. A. An Ovarian Hormone. Preliminary Report on Its Localization, Extraction and Partial Purification and Action in Test Animals. J. A. M. A. 81: 819 (Sept. 8), 1923.

7 Aschheim C. G. Kountz W. B. and Gibson H. V. The Hormone of the Ovarian Follicle. Its Localization and Action in Test Animals and Additional Points Bearing upon the Internal Secretion of the Ovary. Am. J. Anat. 34: 133 (Sept.), 1924.

8 Doisy E. A., Veler C. D. and Thayer S. A. Folliculin from Urine of Pregnant Women. Am. J. Physiol. 90: 329 (Oct.), 1929.

9 Butenandt Adolf. Ueber Progynon, ein kristallisiertes weibliches Sexualhormon. Naturwissenschaften 17: 878, 1929.

the same compound. In the following year Marrian¹⁰ (1930) obtained a different estrogenic compound in the crystalline condition shortly thereafter, Doisy and his co-workers¹¹ (1930) reported the isolation of the same compound. In 1932 Girard and his collaborators¹² reported the isolation of three additional crystalline compounds and Butenandt and Störmer,¹³ and Schwenk and Hildebrandt¹⁴ claimed the isolation of two isomers of the compound originally isolated by Doisy. Using tissues instead of pregnancy urine, Browne and Collip¹⁵ (1931) isolated the compound originally obtained by Marrian. In 1935 MacCorquodale, Thayer and Doisy¹⁶ reported the separation of still another pure estrogenic substance from hog ovaries, and Wintersteiner, Schwenk and Whitman¹⁷ obtained the same compound and one of its isomers from the urine of pregnant mares. Thus there are at least seven naturally occurring estrogenic substances that have been isolated in a crystalline condition. As the result of investigations by Butenandt, Cook, Doisy, Marrian and their respective associates the structure of these and related compounds has been definitely established.

In their earlier work Allen and Doisy called the active substance of liquor folliculi the ovarian hormone, but with the proof of the existence of another ovarian hormone (Hisaw,¹⁸ 1928 Corner,¹⁹ 1929) they changed their designation to ovarian follicular hormone.²⁰ In spite of their realization that this term was cumbersome, they expressed the view that investigators should await the actual isolation of the hormone before applying a name. However, others, chiefly pharmaceutical houses, did not hesitate to apply names. As a few examples, some English investigators called the follicular hormone oestrin, Parke, Davis and Company named its commercial product estrogen, Laqueur called his extract menformon, Loewe, thylinine, and Zondek, folliculin. The term oestrin^{20a} came into rather widespread usage particularly in England.

10 Marrian G F Observations on the Chemical Nature of Crystalline Oestrin J Soc. Chem & Ind 49 515 1930 The Chemistry of Oestrin III An Improved Method of Preparation and the Isolation of Active Crystalline Material Biochem J 24 435 1930 The Chemistry of Oestrin IV The Nature of Crystalline Preparations *ibid* 24 1021 1930

11 Doisy E. A Thayer S A Levin, L and Curtis J M A
New Triatomic Alcohol from the Urine of Pregnant Women Proc Soc.
Exper Biol & Med 28 88 (Oct.) 1930

12 Girard Andre Sandulesco G Fridenson A and Rutgers J J
Sur une nouvelle hormone sexuelle cristallisee retiree de l'urine des
animaux gravides Compt. rend. Acad. d. sc 1941: 909 (March 7) 1932
Sur une nouvelle hormone sexuelle cristallisee ibid 195 981 (Nov 21)
1932 Sur les hormones sexuelles cristallisees retirees de l'urine des
animaux gravides ibid. 194 1020 (March 14) 1932

13 Butenandt Adolf and Störmer I Ueber isomere Follikelhormone Untersuchungen über das weibliche Sexualhormon Ztschr f physiol. Chem **208** 129 1932

14 Schwenk Erwin and Hildebrandt F Naturwissenschaften 20
658 1932

15 Collip J B Proc. California Acad Med 28 1931
16 MacCormac D W Thayer S A. and Doisy E A The

Ovarian Follicular Hormone, Proc. Soc. Biol. Chem. April 10-13 1935
The Crystalline Ovarian Follicular Hormone Proc. Soc. Exper. Biol. &
Med. 32:1182 (April) 1935

17 Wintersteiner Oskar Schwenk, Erwin and Whitman Bradley
Estrogenic Dihydroxy Compounds in the Urine of Pregnant Mares Proc.
Soc. Exper Biol & Med 32 1087 (April) 1935

18 Hisaw F L Meyer R K. and Weichert C K. Inhibition of Ovulation and Associated Histological Changes Proc Soc. Exper Biol & Med. 25 754 (June) 1928

19 Corner G W and Allen W M Physiology of the Corpus Luteum II Production of a Special Uterine Reaction (Progestational Proliferation) by Extracts of the Corpus Luteum, Am. J Physiol 88

20 In the historical development of our knowledge of the regulation of the sexual cycle the following periods may be distinguished. 1 Not only

the studies of the corpus luteum the function of making possible did Frankel attribute to the corpus luteum but he considered this organ also as the sole and maintaining pregnancy 2 The experiments of Leo Loeb defined the active agent in the ovary 3 The experiments of Leo Loeb defined the principal functions of the corpus luteum these made it evident that other factors entered into the domination of the cyclic functions besides the corpus luteum. All the available evidence pointed to the large and mature follicles as the additional factors. These investigations led to the development by Loeb of the concept that a follicular phase and luteal phase have to be distinguished in the sexual cycle. 4 The experiments of Frank and especially of Edgar Allen and Doisy very clearly proved the existence of the follicular hormone. This led to the isolation of pure estrogenic compounds by Doisy and by Butenandt. 5 The comparative evidence in favor of the existence of the two phases mentioned is especially by Courrier and Parkes 6 The work of Corner and Allen as well as of Hixon initiated the investigations which led to the purification of the corpus luteum hormone. The significance of the corpus luteum in regulation of the growth of the mammary gland was proved by Turner and by Turner.

20a The use of the term (o)estrin as a generic name has caused much confusion (see *Glandular Physiology and Therapy*, Chicago: American Medical Association, 1945, page 477). The almost identical designation "estron" is a registered trade mark under which Frederick Stearns and Company markets a mixture of acetylsalicylic acid, acetophenone and caffeine.

With the isolation of the first crystalline estrogenic substance, Doisy sought advice from the Council on Pharmacy and Chemistry on a name for the new compound. It was obvious that the name to be selected should avoid confusion with existing commercial names and also with names for impure extracts. The name selected was theelin (Veler, Thayer and Doisy,¹ 1930). Since there was no established international agency for nomenclature, this term was submitted to the Council on Pharmacy and Chemistry, which approved it as the common name on the condition that it be neither patented, copyrighted nor trademarked. This condition was met and according to Doisy has been adhered to.²²

However, the term theelin has not been widely accepted. Marrion retained the name oestrin and on recognition of several oestrins used distinctive modifications of the original term, Butenandt has used the terms progynon or follikelhormon, Laqueur, menformon (cryst), and Browne and Collip, emmennin, for their crystalline compounds. Perhaps the reasons why the name theelin did not gain universal recognition were that (1) Parke, Davis and Company was allowed to market its preparation of the crystalline substance under the name theelin, (2) the suffix "-in" is not indicative of the chemical nature of the compound, (3) no system of nomenclature for compounds of this series has been proposed.

Two systems of nomenclature have been proposed, one by Girard²³ using the root "folli-" with suffixes to indicate the nature of the compounds the other by a group of English investigators (Adam and collaborators²⁴) using the root "oestr" with certain modifications. It is not known whether, in either case, other investigators were consulted.

In view of the importance of Edgar Allen's investigations in opening up the field of the follicular hormone and of Doisy's contributions in isolating the first crystalline estrus producing compound and the further fact that the Council has approved theelin as a common name, the Advisory Committee considered a proposal (1) to retain 'theel-'²⁵ as the root for the names of the estrus-producing compounds, (2) to adopt a system of suffixes in accordance with recognized principles of nomenclature which would provide satisfactory common names for the entire group of known compounds and of compounds which may be isolated in the future, (3) to modify the designation of the substance now known as theelin in order to remove the objections resulting from its trade usage.

However, in view of the fact that the system of nomenclature devised by Adam and his collaborators²¹ has been fairly widely adopted among investigators, it appeared inadvisable to supplant this system even though the new system based on "thel" was simpler and more nearly in accord with the nomenclature for the androgens. But, as 'theloin' was the name applied by the discoverers of the first crystalline estrogenic compound and

21 Veler C. D Thayer S A and Doisy E A The Preparation of the Crystalline Follicular Ovarian Hormone Theelin J Biol Chem. 87: 357 (June) 1930

22 In New and Nonofficial Remedies 1936, page 323 the following statement occurs: "The Council has recognized the nonproprietary name theelin for the crystalline (ketohydroxy) estrogenic hormone as described by Doisy and the nonproprietary name theol for the crystalline (tri-hydroxy) estrogenic hormone as described by Doisy. The adoption of these names as nonproprietary designations was based on an agreement with Doisy that the name (theelin) will not be copyrighted or used as a trademark. Furthermore the contract of St Louis University with its licensee Parke Davis & Co. requires that the name must be submitted for approval to the Council. In presenting theelin to the Council in 1931 Parke Davis & Co. specifically stated that theelin was not a trademark and had not been registered in foreign countries. Neither 'theelin' nor 'theol' appears in the list of names registered with the Pharmaceutical Trade Mark Bureau (1934) this list contains both names that are registered trade marks and others which are not registered in the patent office."

"Theelin and theelool do appear in appendix XIV of the British Pharmacopoeia Codex 1934 entitled Substances with Proprietary Trade Names. This has been cited as evidence that these names are in fact proprietary. However in the introduction to this appendix it is stated that it is important to note that the majority of names included in the list are registered trade-marks. No distinction is made in this list between trade marks and unprotected names. It is obvious that many of the designations belong in the latter category and that the term 'proprietary' is not properly employed in the Codex. In an *the term* English publication The Extra Pharmacopoeia of Martindale and Westcott 'theelin' is indicated as a nonproprietary designation. 'Theelin and theelool' appear in fact therefore to be nonproprietary names.

24 Adam, N. K., Danielli, J. F., Dill, E. C., Finn, H., Marmar, J. H., and Rosenbaum, O. Nomenclature of the Oerston

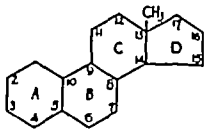
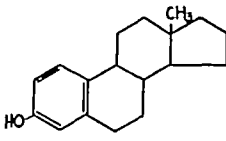
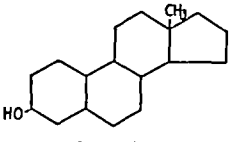
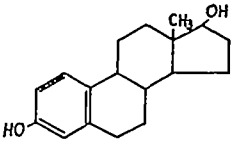
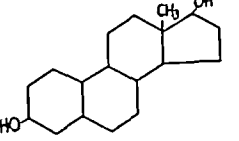
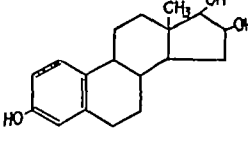
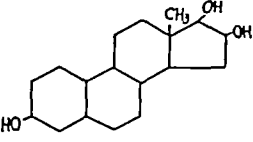
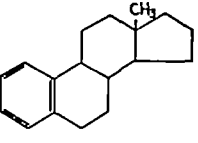
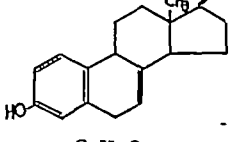
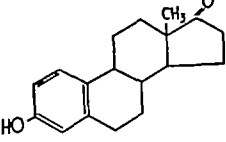
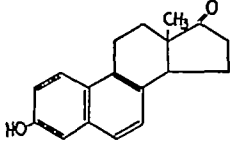
25 "Theel" Etymology Theely a Greek root which in com-
mon always indicates femaleness

as this name and "theclol" stand accepted by the Council as nonproprietary names, the Advisory Committee voted that these terms and "dihydrotheelin" should be retained as synonyms.

Accordingly, the Council, on the recommendation of the Advisory Committee, decided (1) to adopt the system of nomen-

respectively, and (3) to adopt the term *estrogenic* to describe those compounds or extracts which in addition to their other physiologic properties produce estrus, and to adopt the noun *estrogen*²⁶ as the collective term for all the substances having these properties. The structure, empirical formulas and the

Terminology for Estrogens

Common Name	Structure	Chemical Name	Common Name	Structure	Chemical Name
Estrane	 $C_{15}H_{26}$	Estrane	Estrenol	 $C_{15}H_{22}O$	3 hydroxy $\Delta^1, 2$ -estratriene
Estranol	 $C_{15}H_{26}O$	3 hydroxy estrane	Estradiol or Dihydrotheelin	 $C_{15}H_{24}O_2$	3, 17-dihydroxy $\Delta^1, 2$ -estratriene
Estranediol	 $C_{15}H_{26}O_2$	3, 17 dihydroxy estrane	Estriol or Theclol	 $C_{15}H_{24}O_3$	3, 16, 17 trihydroxy $\Delta^1, 2$ -estratriene
Estranetriol	 $C_{15}H_{26}O_3$	3, 16, 17 trihydroxy estrane			
Estratriene	 $C_{15}H_{24}$	$\Delta^1, 2$ -Estratriene	Equilin	 $C_{15}H_{20}O_2$	3 hydroxy, 17 keto $\Delta^1, 2, 3, 4$ -estra- tetraene
Estrone or Theelin	 $C_{15}H_{22}O_2$	3 hydroxy, 17 keto $\Delta^1, 2$ -estratriene	Equilenin	 $C_{15}H_{18}O_2$	3 hydroxy, 17 keto $\Delta^1, 2, 3, 4, 5$ -estra- pentaene

clature based on the root *estr-*, (2) to retain *theelin*, *theelol* and *dihydrotheelin* as synonyms for the compounds known in the aforementioned system as *estrone*²⁶, *estriol*²⁷ and *estradiol*

26 The term *estrone* had been registered by Parke, Davis and Company with the Pharmaceutical Trade Mark Bureau²⁷ but according to the firm it was not registered in the U. S. Patent Office. On the request of the Secretary of the Council, Parke, Davis and Company has agreed to relinquish any proprietary rights that it may have in this name.

27 The name *estriol* (which might readily be confused with *estriol*) is a registered trade mark which is owned by Frederick, Stearns and Company and under which it has marketed its preparation of benzyl succinate. This firm in response to a request by the Secretary of the

common and chemical names of the estrogens are given in the accompanying table.

Council has commendably agreed to relinquish proprietary rights in the trade mark *estriol* in order to avert possible confusion. The Council desires to express its appreciation to Frederick Stearns and Company for its cooperation in this matter.

28 *Estrogen* is a registered trade mark belonging to Parke, Davis and Company. On the request of the Secretary of the Council this firm has commendably agreed to relinquish its proprietary rights in the name on its adoption by the Council as a generic term. The Council desires to express its appreciation to Parke, Davis and Company for its action in this matter as well as in the case of the name *estrone*.

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SATURDAY, OCTOBER 10, 1936

CHILD MORTALITY FROM AUTOMOBILE ACCIDENTS

In every section of the country, concentrated efforts by towns and cities have developed toward diminishing the number of automobile accidents and fatalities. The statistics that have been compiled give evidence of the appalling automobile mortality each year. There is little reason to believe that these figures will diminish in magnitude in the near future. Rigorous measures are required to remedy the condition and to limit the number of accidents. Direct emphasis of the importance of necessary restrictions can best be obtained by a program of public education, based on a compilation and analysis of detailed statistics bearing on the subject. The material dealing with automobile fatalities usually refers only to the total number of lives lost during some definite time in the entire country or in some selected area and only occasionally deals with the loss of life suffered in broad age groups. Careful treatment of mortality figures in various age groups in different geographic regions are of considerable value in bringing proper stress on the seriousness of the situation and in serving as excellent support for proposed programs of reform designed to remedy the condition. This is particularly true for statistics dealing with mortality among children, because of the more marked sentimental appeal that can be made on this basis. Adequate surveys of child mortality from automobile accidents are therefore of particular significance and the United States Public Health Service is rendering valuable aid in supplying these data.

The first two reports in a series of studies on the fatal accidents of childhood have just been compiled by W. M. Gafaer,¹ senior statistician of the United States Public Health Service. The first report considers child mortality in different geographic regions of the United States and deals with single years of age under 5 and for the age groups 5 through 9 and 10 through 14 years. In this report the period is limited to 1930 principally because it is the most recent year for which

accurate population enumerations exist. The second report presents a study of certain time changes in the distribution of mortality from automobile accidents among children in the United States. The period in this publication extends from 1925 through 1932. For purposes of comparison of automobile fatalities with other causes of death, statistics are included for mortality from other accidents, and for further comparative purposes the mortality is included from three common communicable diseases, namely, measles, scarlet fever and diphtheria. Analysis of these comparative data reveals that under 15 years of age there were more than two deaths from accidents to one death from the three diseases, only for infants of 1 year is the ratio less than 1. Mortality from automobile accidents seems to vary in importance with age. Considering all total accidents, mechanical suffocation leads at under 1 year of age, burns at 1 and 2 years, automobile accidents and burns at 3, and automobile accidents at 4, 5 to 9 and 10 to 14 years of age. Of forty-seven states and the District of Columbia, divided into four broad geographic groups the Northeastern section of the country leads in deaths of children from automobile accidents, this is undoubtedly related to the comparatively large number of automobile registrations in this area.

These illuminating statistics present interesting relationships between the number of fatalities from automobile accidents and those from accidents of all types and strikingly emphasize the overwhelmingly high mortality of children from automobile accidents. Such a survey should serve as a concrete basis not only for drastic and sane restrictions on the operators of motor vehicles but also for emphasizing to the pedestrian the potential danger of the automobile.

THE SEX RATIO AT BIRTH

Various theories have been offered in explanation of the well known fact that the number of male births always exceeds that of female births. Although the biologic processes that ultimately determine the preponderance of males as compared with females at birth are, according to Russell,¹ imperfectly understood yet, it is possible to study the relation to such purely external factors as age, nationality and social status of the parents, and to primogeniture and size of the family, seasonal and secular trend, and the extent to which it is influenced by cross-breeding, migration and social upheavals. Such was the purpose of the study recently reported by Russell.

The statistics on which the investigations were based were obtained from (1) the Annual Reports of the Registrar-General for England and Wales, (2) the Reports on Births and Still Births in the United States, (3) *Annuaire international de statistique* and (4) the

¹ Gafaer, W. M. *Pub. Health Rev.* 51: 1093 (Aug. 7) 1936 (Aug. 28) 1936.

¹ Russell, W. T. *Statistical Study of the Sex Ratio*. J. H. K. 36: 381 (July) 1927.

records of families given in Burke's Peerage for the seventeenth, eighteenth and nineteenth centuries. In England and Wales the proportion of males per thousand females during the past ninety-five years ranges from 1,032 to 1,061, the latter value occurring immediately after the war. The mean ratio over the whole period was 1,043, and the average dispersion or scatter as represented by the standard deviation was 5.7. For London the experience over a longer series of years (292, from 1629 to 1920) could be obtained from the study of christenings. Since there is no evidence of the selection of christening of boys as compared with girls, the resultant figures cannot be considered inaccurate per se. The values obtained correspond closely with those for England and Wales for a shorter period.

The association between the degree of urbanization and the size of the sex ratio has concerned some writers on the subject. The evidence obtained from English data with regard to the higher proportion of masculinity in the rural areas as compared with urbanized centers is supported by the available statistics in the United States. The latter showed that the sex ratios in the urban and rural areas during the period 1927-1929 were $1,057 \pm 1.20$ and $1,064 \pm 1.15$ respectively. The difference of 7 ± 1.66 in favor of the rural areas is thus greater than would be expected to arise by mere chance. A possible explanation of the higher ratios of live births in rural areas as compared with urban centers is a probable lower incidence of abortions in the former, superadded to the undoubted fact that the proportion of still births to total live births is lower in the country than in the town. Some investigators have stressed the fact that the sex ratio of illegitimate births is smaller than that of live births. The English statistics, however, reveal an index for illegitimate births almost identical with that for legitimate ones.

A study of the seasonal variation of the index in England and Wales supports the general belief in the absence of any seasonal correlation. However, the statistics for the urban and rural divisions of the United States for the period 1921-1924 and for New York City for 1929-1933 reveal evidence of a definite trend. In each area the sex ratio is lowest in the first quarter, attains its maximum in the second, and then gradually declines, hence the American statistics, contrary to the experience in England, support the view that conception occurring from July to September is favorable to increased masculinity.

In some countries, particularly Greece, the masculinity of births is exceptionally high, in others, Japan and Italy, low, and there is evidence that the ratio may be influenced through such a factor as migration. Births resulting from marriages of the same nationalities in foreign lands result in a lower sex ratio than those occurring in the home land. There is no satisfactory evidence obtainable that marriage of different nationals, or what may be termed crossbreeding,

influences the index. Social upheavals do influence the index. In countries that were affected by the World War, the sex ratio was high. It was higher after the termination than during the war. Neutral countries experienced the same phenomenon but not to such an appreciable degree. The ratio is higher among first born children and declines with increased family size. In England and Wales the masculinity ratio is definitely correlated with social status, i. e., the index decreases in size with descent in the social scale. The causes for this are not clear.

Russell was able to find no conclusive evidence that the sex ratio is related to the age of the parents, but any relationship that may exist is with the age of the father rather than with the age of the mother. The biologic fact of the preponderance of male births in the human race is an established one but its purpose is still a matter of debate.

The observations brought out by the studies of Russell and others furnish material of wide interest to all those interested in biologic processes. A further analysis of the factors that may be involved would doubtless prove of additional significance. The sex ratio in other species of animals might serve as the essential clue in determining the ultimate objectives of nature in producing this inequality.

VITAMIN C AND TUBERCULOSIS

Investigations during the past few years have indicated that vitamin C plays an important part in determining the resistance of the animal organism to certain types of bacterial infections and toxins. For example, guinea-pigs fed a ration deficient in the vitamin are much less resistant to diphtheria toxin than are normal control animals, similarly, the administration of vitamin C (cevitamic acid) to normal guinea-pigs increases their resistance to the toxin¹. A protective effect of vitamin C against tuberculous infections in animals has likewise been described repeatedly. Decreased resistance to tuberculous infection develops in animals fed a vitamin C deficient diet and, conversely, an increased susceptibility to acute scurvy is seen in infected animals.

The comparatively recent introduction of methods for the determination of vitamin C and for following the intake and excretion of the vitamin has made possible studies on the metabolism of this substance in human subjects. As a result, the amounts of vitamin C ingested daily in the ordinary mixed diet and excreted daily in the urine of normal human subjects are known with some degree of certainty. More recently, studies of this type have been made on patients with various diseases, the results in tuberculous patients have been

¹ Greenwald, C. K. and Harde, E. Vitamin C and Diphtheria Toxin. *Proc. Soc. Exper. Biol. & Med.* **32**:1157 (April) 1935. King, C. G. and Menten, M. L. The Influence of Vitamin C Level upon Resistance to Diphtheria Toxin. I. Changes in Body Weight and Duration of Life. *J. Nutrition* **10**:129 (Aug.) 1935. Jungeblut, C. W. and Zwemer, R. L. Inactivation of Diphtheria Toxin in Vivo and in Vitro by Crystalline Vitamin C. *Proc. Soc. Exper. Biol. & Med.* **32**:1229 (May) 1935.

particularly interesting. Two such studies² have indicated that there is an increased requirement for vitamin C in tuberculosis and that a somewhat subnormal amount of the substance is excreted daily in the urine. A current contribution³ presents further data of this type obtained on a group of forty-four patients with mild, moderately advanced or far advanced tuberculosis. The amount of vitamin C excreted daily in the urine was determined by titration against 2-6 dichlorophenyl-indophenol and the values obtained were classified into four arbitrary groups in the order of their magnitude. The percentage of patients with active tuberculosis was then calculated for each group, with a rather striking outcome. Five of the six patients in the group excreting the smallest amount of vitamin C, from 0 to 5 mg daily, had active tuberculosis, there was probably some activity also in the sixth. In the second group, which excreted from 5 to 8 mg daily, active tuberculosis was present in nine of fourteen, or 70 per cent, whereas in the group excreting from 8 to 14 mg daily only seven of twenty-one, or 33 per cent, showed activity, and in the group excreting over 14 mg daily only one of thirteen patients, or 7 per cent, showed activity. These results, together with others, seem to indicate that in active tuberculosis there is a decreased excretion of vitamin C or, at least, some substance affecting in a similar manner the method of determining the vitamin. These data may be interpreted as indicating an increased requirement of vitamin C in tuberculosis.

A second type of experiment on the same patients yielded further evidence for an increased vitamin C requirement in tuberculosis. The effect on the urinary excretion of the vitamin resulting from the daily administration of 4 ounces (120 cc) of orange juice containing 55 mg of cevitamic acid was determined. This amount of vitamin C is sufficient to cause a definite increase in the amount excreted by the normal person. As in the preceding experiment, definite differences associated with the degree of activity of the disease were seen in the various patients. In eight of ten cases showing active tuberculosis no increase in vitamin C excretion above a minimal arbitrary value occurred, whereas in all fourteen cases showing inactive tuberculosis a significant increase in the excretion of the vitamin occurred. From these data it appears that between 55 and 138 mg of vitamin C was required daily by patients with active tuberculosis for the maintenance of a normal rate of excretion of the substance. In one patient, 200 mg of cevitamic acid did not suffice for the maintenance of equilibrium between the intake and the excretion of the vitamin. These amounts stand in distinct contrast to the quantity from 15 to 30 mg daily, of vitamin C required by a normal healthy adult.

Although the foregoing evidence appears to indicate definitely the existence of an increased requirement of vitamin C in active tuberculosis, perhaps before final conclusions are drawn several other factors should be considered. The titrimetric procedure for the determination of vitamin C is not entirely specific for cevitamic acid, therefore it would seem that adequate confirmation of the present observations by a different method would be desirable. Also such factors as the possibility of an increase in the excretion of vitamin C through other paths, as the sweat, and possible correlations of the changes in the vitamin requirement in tuberculosis with changes in body temperature should be investigated. In certain diseases, for example, the period of fever appears to be associated with a decreased excretion of vitamin C.

Current Comment

THE PRESIDENT AND SOCIAL SECURITY

Using the occasion of the dedication of the Jersey City Medical Center, President Franklin D. Roosevelt extended appreciation to the medical profession for its services in the depression. He said:

Let me with great sincerity give the praise which is due to the doctors of the nation for all that they have done during the depression, often at great sacrifice, in maintaining the standards of care for the sick and in devoting themselves without reservation to the high ideals of their profession.

This statement had been prefaced by a recognition of the fact that the Public Works Administration had increased the capacity of American hospitals by some 50,000 beds. Moreover, the President mentioned the desire of the medical and nursing professions to do more to help families of small income in time of sickness. Particularly interesting to physicians, however, were the words of assurance in which the President intimated a desire to still certain apprehensions which have been prominent in medical discussions for many months. He continued:

The medical profession can rest assured that the federal administration contemplates no action detrimental to their interests. The action taken in the field of health as shown by the provisions of the splendid social security act recently enacted is clear.

There are four provisions in the social security act which deal with health and these provisions received the support of outstanding doctors during the hearings before the Congress. The American Medical Association, the American Public Health Association and the State and Territorial Health Officers Conference came out in full support of the public health provisions. The American Child Health Association and the Child Welfare League endorsed the maternal and child health provisions.

This in itself assures that the health plans will be carried out in a manner compatible with our traditional social and political institutions. Let me make that point very clear. All states and territories are now cooperating with the public health service. All states except one are cooperating in maternal and child health service, all states but ten in service to crippled children and all states but nine in child welfare.

Public support is behind this program. But let me stress in addition that the act contains every precaution for insuring the continued support and cooperation of the medical profession.

2 Schroeder, Hermann. Die Ausscheidung der Acorbinsäure im Gesunden und Kranken Organismus. *Klin. Wchnschr.* 14: 484 (April 6) 1935.
Bulowa, I. G., Rothstein, I. A., Ratush, H. D., and Harde, E. Cevitamic Acid Excretion in Pneumonia and Some Other Pathological Conditions. *Proc. Soc. Exper. Biol. & Med.* 34: 1 (Feb.) 1936.
3 Hesse, F. H., and Martin, G. J. Ascorbic Acid Metabolism in Tuberculosis. *Proc. Soc. Exper. Biol. & Med.* 34: 642 (June) 1936.

In the actual administration of the social security act we count on the cooperation in the future as hitherto, of the whole of the medical profession throughout the country. The overwhelming majority of the doctors of the nation want medicine kept out of politics. On occasions in the past, attempts have been made to put medicine into politics. Such attempts have always failed and always will fail.

Government, state and national, will call upon the doctors of the nation for their advice in the days to come.

The meaning of these words should be clear to all who read. They would seem to signify that the voice of organized medicine has been heard and appreciated in the executive branch of our government. They conclude with a promise of consultation with expert medical advice as new problems arise in the future. The devotion of the medical profession to the public need in our years of stress surely warrants such confidence.

Medical Economics

EVILS OF CONTRACT PRACTICE

Contract practice, in this country, was born of geographic and social necessity. When certain pioneering industries such as mining, lumbering and construction work pushed beyond established settlements, such industries were obliged to provide whatever medical facilities were supplied to such isolated communities. This service varied widely in quality but was better than none.

Most modern types of contract practice lack this excuse of necessity. Instead of meeting a lack of facilities in an isolated locality they compete with adequate facilities already established. The motive of establishment is not the benefit of those receiving the service but the possibility of financial gain to those contracting for the delivery of the service. Contract systems are now operated more often to reduce compensation costs, absenteeism, labor turnover, inefficiency and wage payments than to supply needed medical service.

This conclusion as to motive is justified by certain facts. The contract plans do not add to existing services. The features for which their founders fight hardest are those most profitable to industry but not always most helpful to the patients. The managers of the plan insist on choosing the physicians. This choice is determined more by the amounts paid physicians, the character of the medical testimony that will be given in damage suits and compensation cases, and ability to keep down costs than by professional qualifications or devotion to the patient's welfare. The patient is given little or no choice, the most desirable ethical practitioners in the community usually refusing to enter the contract group from which the patient must choose. Contract practice is at present almost universally accompanied by advertising, commercial bargaining, underbidding, subletting, coercion or plain racketeering, and all of these are destructive ingredients in medical service.

If these flagrantly undesirable commercial features could be eliminated, the result of injecting contract practice into the present system of medical practice would still be injurious to the general character of medical service. Contract practice always is restricted to a selected group—generally of adult employees. It leaves uncared for the mass of children, aged women, unemployed and those most in need of medical service. Such an exclusion by reducing the field of private practice, inevitably lowers the quality of care it is possible to give to those outside the contract scheme. By thus lowering the standard of medical service in the field with which contract practice must be compared, this situation tends in turn to lower the standards that will be maintained under contract.

Contract medicine is almost exclusively curative medicine. It gives little attention to prevention. The amount of work demanded of each salaried physician is usually so great that he has little time for immunizations and other preventive mea-

asures. The restricted coverage makes it impossible to reach the children and others most in need of preventive service. The isolated group character of contract practice does not encourage the contract physicians to become interested in preventive work for an entire community.

Contract practice is so prone to a certain set of defects that they may almost be said to be inherent. Insufficient pay to overworked physicians encourages superficial service. When financial considerations such as compensation are dominant, incidents have been recounted in official investigations of unnecessary amputations to insure an earlier discharge and release from compensation payments, and the use of untrained laymen in giving medical care.

Continuous experience through many years in widely separated localities and under most varied conditions would seem to indicate that it is difficult if not impossible to eliminate these undesirable and dangerous features of contract practice. It is too much to expect that commercial interests, having no knowledge of the principles of medical ethics and no understanding or appreciation of the personal and private relationships that should exist between patient and physician, should devise and administer a system of medical care devoted alike to the interests of the public and of the medical profession.

Association News

ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES

The Board of Trustees held a two-day session at Association Headquarters in Chicago on September 24 and 25.

CHARLES GORDON HEYD, PRESIDENT

On announcement of the death of the President Dr. James Tate Mason, the Board declared Dr. Charles Gordon Heyd President, in accordance with the Constitution and By-Laws of the Association.

APPOINTMENTS

In accord with resolutions adopted by the House of Delegates at the Kansas City session, the Board appointed, or authorized the appointment of committees to study asphyxia, air conditioning, blood grouping, motor vehicle accidents, and the value of x-ray film with paper base as a substitute for film with gelatin base, also an advisory committee on cosmetics. The composition of these committees will be announced later.

Advisory Committee of the Committee on Scientific Exhibit
Dr. Eben J. Carey of Milwaukee to succeed himself for a term of three years, and Dr. James P. Leake of Washington, D. C., to succeed Dr. Hans Zinsser.

Council on Foods Dr. James S. McLester.

Editorial Advisory Committee for Hygeia Drs. Olin West, W. W. Bauer, P. A. Teschner, Frank J. Clancy and R. G. Leland.

Representatives on Advisory Committee on Medicine and Public Health of the World's Fair to be held in New York City in 1939 Drs. Nathan B. Van Etten and Arthur W. Booth of New York.

The following appointments, made by mail during the interim between meetings of the Board, were confirmed.

Drs. Franklin G. Ebaugh, J. Allen Jackson, Walter L. Treadway and H. Douglas Singer to represent the Association on the Cooperative Committee for a Survey of Public Mental Hospitals in the United States.

Drs. Roger I. Lee, Nathan B. Van Etten and William C. Woodward to represent the Association at the meeting of the American Bar Association held in Boston the week of August 24, and Drs. Holman Taylor and E. H. Cary, at the meeting of the American Pharmaceutical Association held in Dallas, August 24-29.

Dr. C. B. Wright to represent the Association at the dedication of the monument to Dr. Perry H. Millard at Stillwater, Minn. on June 7.

APPROPRIATIONS

Appropriations were authorized to cover the expense of the first meeting of new committees, as well as for the Committee to Study Contraceptive Practices and Related Problems, for special exhibits on fractures and anesthesia for the next annual session of the Association, and for the renewal of the dramatized radio programs

RESIGNATION OF DR GEORGE MILLER MACKEE FROM
COUNCIL ON PHYSICAL THERAPY

The resignation of Dr George Miller MacKee tendered because of the necessity for curtailing his activities was accepted with regret and with a statement of the Board's appreciation of the splendid service he has rendered to the Council

MISCELLANEOUS

Matters pertaining to advertising methods, legislation, governmental activities concerned with medicine and public health and numerous other subjects were considered on which no action could be taken at this time but which will come before the Board from time to time in the future

RADIO BROADCASTS

Health Dramas to be Resumed October 13

The American Medical Association and the National Broadcasting Company present the second series of dramatized health broadcasts under the title *Your Health*, beginning October 13. The first broadcast in the new series will be the thirty-second dramatized cooperative broadcast under the title *Your Health*. The theme for 1936-1937 will differ slightly from the topic in the first series which was 'medical emergencies and how they

New England States

WEEI—Boston
WTIC—Hartford
WJAG—Providence
WTAG—Worcester
WCSH—Portland Me

Middle Atlantic States

WEAF—New York
KYW—Philadelphia
WCAE—Pittsburgh
WGY—Schenectady
WBEN—Buffalo

West North Central States

KSD—St Louis
WHO—Des Moines
WOW—Omaha
WDAF—Kansas City
KSTP—Minneapolis St Paul
WEBC—Duluth Superior
WDAZ—Fargo
KFJR—Bismarck

East North Central States

WTAM—Cleveland
WLW—Cincinnati
WSAI—Cincinnati
WCKY—Cincinnati
WWJ—Detroit
WMAQ—Chicago
WMTJ—Milwaukee
WTJB—Madison
WHIO—Dayton
WIRE—Indianapolis
WOOD—Grand Rapids

West South Central States

WSNB—New Orleans
KVOO—Tulsa
WKY—Oklahoma City
WFAA—Dallas Fort Worth
WBAP—Dallas Fort Worth
KTHS—Hot Springs
KTBS—Shreveport
KPRC—Houston
WOAI—San Antonio

South Atlantic States

WFBR—Baltimore
WRC—Washington
WRVA—Richmond
WTAR—Norfolk
WFBC—Greenville S C
WCSA—Charleston S C
WSOC—Charlotte
WPTF—Raleigh
WVNC—Asheville
WIS—Columbia
WJAX—Jacksonville
WFLA—Tampa
WSUN—Tampa
WIOD—Miami
WSB—Atlanta

East South Central States

WAVE—Louisville
WSM—Nashville
WMC—Memphis
WAPI—Birmingham
WJDA—Jackson

Mountain States

KTAR—Phoenix
KGIR—Butte
KGHL—Billings
KOA—Denver
KDYL—Salt Lake City

Pacific States

KPO—San Francisco
KFI—Los Angeles
KGW—Portland Ore
KOMO—Seattle
KHQ—Spokane

Canada

CRCT—Toronto
CFRC—Montreal

Hawaii

HQ—Honolulu

The program will be on the Red network and Pacific network of the National Broadcasting Company. The stations listed above are those to which the program is available.

It should be noted that a station may take the program or not. If a station included in the list is not broadcasting the program *Your Health*, it is possible that the management may be induced to broadcast the program if it receives evidences of local interest. The committee on education or other appropriate committee of the local medical society might take this matter up with the station management and tender cooperation in giving the program local publicity.

The topics are announced monthly in advance in *H3gen*, the Health Magazine, and three weeks in advance in each weekly issue of *THE JOURNAL*. The topics and speakers for October are as follows:

October 13 What to Do for Blind Children W W Bauer MD
October 20 Arthritis Morris Fishbein MD
October 27 Help for the Deafened W W Bauer MD

The time of the broadcast is Tuesday afternoon at 5 o'clock eastern standard time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Plague Infection.—According to *Public Health Reports* plague infection has recently been proved, by animal inoculation in four ground squirrels received at the laboratory of the state department of public health from localities near Hackamore, in Modoc National Forest, Modoc County.

Society News.—The Hollywood Academy of Medicine was addressed, September 24, by Dr Fred L Soper, Rio de Janeiro, Brazil, on *Jungle Yellow Fever*. New Epidemiologic Entities in South America.—Dr Oswald S Lowsley, New York addressed the San Francisco chapter of the Pan American Medical Association, September 23, on "Modern Renal Surgery" and conducted a clinic at the San Francisco County Hospital.—At a special meeting of the staff of Peralta Hospital, Oakland, Dr Olin H Garrison presented a case report on pernicious anemia and Dr Edward F Roberts, New York gave an illustrated address entitled "Pernicious Anemia and Parenteral Liver Therapy".—The San Francisco County Medical Society will be addressed October 13 by Dr Howard C Naffziger, San Francisco, on "Progressive or Malignant Exophthalmos Related to Thyroid Disease."

CONNECTICUT

Sir Joseph Barcroft Gives Terry Lectures.—Sir Joseph Barcroft, professor of physiology, University of Cambridge, England, delivered the Terry Lectures at Yale University October 5-7, on "Three Aspects of the Relation of Environment to Organism." The titles of the individual lectures were "Mental Efficiency Considered in Relation to Some Properties of the Blood," "Origins of Behavior in the Fetal Environment" and "The Transition from Fetal to Neonatal Conditions."

DISTRICT OF COLUMBIA

Society News.—The Medical Society of the District of Columbia will be addressed October 21 by Drs William J Mallory, John A Reed and Maurice Protas on "Observations on the Use of Insulin Prothrombin in the Treatment of Diabetes Mellitus" and Dr Garnet W Alt. Recent Advances in Proctology. Edmund A Walsh, PhD will address the society October 14.

Personal.—Dr Arthur C Christie was recently elected to honorary membership in the Societa Italiana di Radiologia Medica and in the Deutsche Röntgen Gesellschaft.—Dr William A Warfield Sr., for forty years surgeon-in-chief at Freedmen's Hospital, a government institution, will be retired November 17, newspapers announce. Dr Warfield is professor of abdominal surgery at Howard University College of Medicine. Dr Thomas Edward Jones will succeed Dr Warfield at the hospital.

are met." The new series will be built around the central idea that 100,000 American physicians in great cities and tiny villages who are members of the American Medical Association and of county and state medical societies stand ready day and night to serve the American people in sickness and in health.

FLORIDA

New Dental Bureau—The state board of health has created a new bureau of dental health with E. C. Geiger, DDS, Jacksonville, in charge. It is planned to carry out a program of dental health education that will include the examination of every school child in the state. Recommendations will be made to parents and in cases of underprivileged children a plan for free dentistry is being worked out. It is reported that a recent survey of school children of the state revealed that from 75 to 90 per cent of those examined were suffering from dental defects.

IDAHO

Society News—Drs. William F. Passer, Twin Falls, and Joseph N. Davis, Kimberly, addressed the South Side Medical Society, Twin Falls, recently, on Infant Feeding and The Rocky Mountain Spotted Fever, respectively.

ILLINOIS

Prevalence of Poliomyelitis—A record of 206 cases of infantile paralysis in Illinois in September was the highest monthly total of cases of this disease since 1917 according to the *Chicago Tribune*, September 28. Because of the general increase in prevalence throughout the state the Illinois department of health has requested volunteer contributions of blood from persons who have recovered from the disease in the last fifteen years.

Society News—Dr. Franklin E. Walton, St. Louis, addressed the Vermilion County Medical Society in Danville, September 2, on "Diagnosis and Management of Biliary Tract Diseases."—Dr. Earl O. Latimer, Chicago, addressed the Will Grundy County Medical Society, September 30, on treatment of appendicitis.—At a meeting of the Du Page County Medical Society, September 16, Dr. Clarence J. McMillen, Chicago, spoke on diabetes mellitus.—Speakers before the La Salle County Medical Society in Ottawa, September 23, were Drs. Jacob J. Singer, St. Louis, on Diagnostic Methods in Obscure Chest Conditions, and Willard F. Arbuckle, St. Louis, "Pulmonary Conditions Revealed by the Bronchoscope."—Dr. William H. Holmes, Chicago, discussed undulant fever before the Sangamon County Medical Society, October 1.—At a meeting of the DeWitt County Medical Society in Clinton, September 23, Dr. Robert S. Berghoff, Chicago, spoke on heart disease.

Chicago

Personal—Dr. Mary Stone, head of the Bethel mission center, Shanghai, China, was guest of honor at a dinner given by women physicians of Chicago at the Women and Children's Hospital.

The Bacon Lectures—Dr. Frank W. Lynch, professor and head of the department of obstetrics and gynecology, University of California School of Medicine, San Francisco, will deliver the seventh annual Charles Sumner Bacon Lectures at the University of Illinois College of Medicine, October 16 and October 23. Dr. Lynch's subjects will be "Carcinoma of the Uterus" and "Uterine Fibroids."

Society News—The Chicago Council of Medical Women was addressed October 2 by Dr. Esther T. Frankel on "Indications for Physiotherapy."—Dr. George E. Bennett, Baltimore, addressed the Chicago Orthopaedic Society, October 9, on "Acute, Recurrent and Old Dislocations of the Shoulder."—Drs. Paul H. Harmon and Carroll O. Adams, Pyogenic Arthritis of the Hip, with Special Reference to Pathological Dislocation and Treatment.

Mills Foundation Aids Work on Cancer—Wesley Memorial Hospital announces the receipt of an annual allotment from the Davella Mills Foundation, Montclair, N. J., for the treatment of cancer patients and research on cancer. The sum of \$7,500 was allotted for 1936 and in June of each year an appropriation will be made. The Davella Mills Foundation was created in 1934 by Mr. David B. Mills and his wife Ella. The income is used to further the activities of several philanthropies.

INDIANA

Society News—Dr. Bert E. Ellis, Indianapolis, discussed "Obstruction of the Larynx" before the Fayette-Franklin Medical Society in Brookville, September 8.—Dr. Charles P. Emerson, Indianapolis, addressed the Gibson County Medical Society in Princeton, September 14, on "Later Developments in the Early Recognition, Treatment and Control of Cancer."—Dr. Baruch M. Edlavitch, Fort Wayne, presented a clinical study of insulin protamine before the Fort Wayne Medi-

cal Society, September 15.—At a meeting of the Madison County Medical Society in Anderson, September 21, Dr. Henry O. Mertz, Indianapolis, discussed "Relation of Urological Diseases to the Differential Diagnosis of General Abdominal Diseases."—Dr. Frank Forry, Indianapolis, addressed the Carroll County Medical Society in Burlington, September 10, on cancer.—The Hendricks County Medical Society was addressed in Danville, September 17, by Dr. Jewett V. Reed, Indianapolis, on "Injuries of the Skull and Traffic Accidents of the Day."—Dr. Roscoe L. Sensemich, South Bend, addressed the Tippecanoe County Medical Society at LaFayette recently on "Political Trends Today Affecting Medical Practice."

KENTUCKY

New Health Officers—Dr. James W. Miller, recently health officer of Gallatin County at Warsaw, has been transferred to Green County to succeed Dr. Jesse M. Dishman. Greensburg recently appointed in Caldwell County. Dr. Emil A. Steiner, Cleveland, Ohio, has been appointed in Pulaski County, and Dr. James O. Nall, recently of Murray in Trigg County.

LOUISIANA

Health at New Orleans—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended September 26 indicate that the highest mortality rate (187) appears for New Orleans and for the group of cities as a whole, 10.2. The mortality rate for New Orleans for the corresponding period last year was 17.4 and for the group of cities 10. The annual rate for eighty-six cities for the thirty-nine weeks of 1936 was 12.2 as against a rate of 11.4 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

MASSACHUSETTS

Honorary Degrees Conferred at Harvard Tercentenary—At the exercises commemorating the tercentenary of Harvard University, September 18, honorary degrees of doctor of science were conferred on the following, among others, who took part in the conferences:

Dr. Edgar Douglas Adrian, Foulerton, professor of physiology of the Royal Society and fellow of the Trinity College, Cambridge.
Sir Joseph Barcroft, professor of physiology, University of Cambridge.
Dr. James B. Collip, professor of biochemistry, McGill University, Faculty of Medicine, Montreal.
Dr. Ross Granville Harrison, Sterling professor of biology, Yale University School of Medicine, New Haven, Conn.
Sir Frederick Gowland Hopkins, professor of biochemistry, University of Cambridge.
Dr. Bernardo A. Houssay, director, Institute of Physiology, Buenos Aires.
Dr. Pierre Marie Felix Janet, professor of psychology, College of France, Paris, France.
Dr. Carl Gustav Jung, Kusnacht, near Zurich, Switzerland.
Dr. August Krogh, director of the Zoophysiological Laboratory at the University of Copenhagen.
Dr. Karl Landsteiner, Rockefeller Institute for Medical Research, New York.
Dr. Kijoshi Shiga, president of the Governmental University, Keijo, Chosen, Korea.
Dr. Hans Spemann, professor of zoology, Faculty of Natural Sciences and Mathematics, University of Freiburg, Germany.

MICHIGAN

State Medical Election—Dr. Henry Cook Flint was chosen president elect of the Michigan State Medical Society at its annual meeting in Detroit, September 21-24, and Dr. Henry E. Perry, Newberry, was installed as president.

Society News—Dr. Geza de Takats, Chicago, addressed the Calhoun County Medical Society in Battle Creek, September 1, on "Treatment of Varicose Veins."—The Allegan County Medical Society was organized, August 18, with Drs. George H. Rigmink, Hamilton, as president, Olin H. Stuck, Otsego, vice president, Morley B. Beckett, Allegan, county health officer, secretary, and Roy A. MacNeill, Allegan, treasurer.—Dr. Louis B. Wilson, Rochester, Minn., gave a lecture in the graduate series sponsored by the Wayne County Medical Society, Detroit, October 5, his subject was "National Specialty Qualifying Boards in Relation to Graduate Medical Education."—The opening meeting of the new season of the West Side Medical Society, Detroit, October 1, was addressed by Drs. Warren O. Nelson and Charles G. Johnston, both of Detroit, on "Some Endocrine Influences in Atypical Growth and Some Problems Relating to the Care of the Patient with Gallbladder Disease," respectively.

NEW MEXICO

Personal—Dr James R. Scott, Albuquerque, has resigned as health officer of the third district, Dr Julian O. Long has been provisionally appointed to succeed him.

Hospital News—A ten bed private hospital was recently opened at Tularosa, with Dr Clyde H. Hemphill as chief of staff, Dr Leo R. Gaddis, Alamogordo, chief surgeon, and Dr John D. Robinson, in charge of general medicine. It is known as the Hemphill Hospital.

County Health Demonstration—San Miguel County has been selected for a demonstration of public health service as part of a statewide plan for maternal and child health services, with funds derived in part from the county and in part from money allotted to the state by the U. S. Children's Bureau under the Social Security Act. The program as outlined in the *New Mexico Health Officer* includes general public health nursing with particular attention to health education, to cooperate with New Mexico Normal University in a plan that includes extension of health education in the county and establishment of antepartum, maternal, infant welfare, preschool and school children's clinics for promotion of public health. These clinics will be held if possible in cooperation with the local medical society, according to the bulletin.

NEW YORK

Society News—The New York State Association of Public Health Laboratories will hold its midyear meeting November 6 at the state laboratory in Albany.—Dr Robert P. Dobbie, Buffalo, addressed the Medical Society of the County of Niagara September 8 on surgery of the biliary tract.—Motion pictures by Drs Allen B. Kanavel, Chicago, on 'Diagnosis and Treatment of Infections of the Hand' and Grover C. Penberthy, Detroit on 'Treatment of Burns' were shown at a meeting of the Dutchess County Medical Society, Poughkeepsie, September 9.

New Buildings for Crippled Children's Hospital—Several new buildings at the New York State Reconstruction Hospital at West Haverstraw were dedicated September 24. The buildings which have been built since the transfer of the institution to the state department of health in 1931 consist of two wards, a school for all grades through high school, a dining room and kitchen, a power plant and a treatment center. The treatment center includes facilities for electric massage, electrotherapy and hydrotherapy, a large recreational and correctional swimming pool and two smaller treatment pools. Governor Lehman gave the dedicatory address and other speakers were Drs Edward S. Godfrey Jr., state health commissioner, and Walter Thompson, president of the hospital's board of visitors.

New York City

Serum Laboratory Established—The Manhattan Convalescent Serum Laboratory has been established in the research laboratory of the department of health for preparation and distribution of immune serums for measles, scarlet fever and other communicable diseases. Dr William Thalheimer is in charge of the new service.

Personal—Mr Lawrence K. Frank, formerly associate director of education of the General Education Board has been appointed assistant to the president of the Josiah Macy Jr. Foundation. Dr Ludwig W. Kast is the president.—Drs Edgar Mayer and James Burns Amberson Jr. have been appointed by the state industrial commissioner as consultants on dust diseases.

Society News—A symposium on obstetrics was presented at the meeting of the Medical Society of the County of Queens September 29, by Drs Edward S. Godfrey Jr., Albany, state health commissioner, Harriet M. White, Richmond Hill, Moses Cohen, Long Island City, Henry C. Eichacker, Brooklyn, Walter H. Kerby, Woodhaven, George J. Lawrence, Flushing, and James P. McManus, Hollis.—The second series of lectures to the public sponsored by the New York Academy of Medicine was begun October 8 by Dr Smith Ely Jelliffe who spoke on 'The Historical Background of Psychiatry'.

NORTH CAROLINA

Society News—Drs William G. Bandy and John W. Same, Lincolnton, addressed the Catawba Valley Medical Society, Hickory, September 8 on 'Diagnosis and Treatment of the Common Causes of Indigestion and Purpura Haemorrhagica' respectively.—Dr John H. Musser, New Orleans, addressed the Puncombe County Medical Society, Asheville, August 24 on coronary occlusion.

Personal—Dr Martin L. Stevens, Asheville, has been appointed a member of the board of trustees of the state tuberculosis sanatoriums.—Dr Paul P. McCain, superintendent of the State Sanatorium, Sanatorium, received the honorary degree of doctor of laws at the annual commencement of the University of North Carolina.—Dr Ruth M. Collings, assistant physician to Woman's College of the University of North Carolina, Greensboro, has been appointed college physician to succeed Dr Anna M. Gove, who has retired.—Dr Maria S. Naples, Cleveland, Ohio, has been appointed assistant.—Dr Alfred D. Gregg, Liberty, has been appointed health officer of Vance County, succeeding Dr Zack P. Mitchell, Henderson, who has been appointed health officer of Swain and Graham counties.

OHIO

Personal—Dr Paul C. Bratten, New Bremen, has been appointed health officer of Shelby County to succeed the late Dr Alfred B. Lippert.—Dr Gordon E. Savage, Osborn, has been appointed health officer of Greene County, heretofore the position has been half time.

Fiftieth Anniversary of Practice—The Tuscarawas County Medical Society entertained Dr Byron G. Anderson, Uhrichsville, at a dinner September 10 in honor of his fiftieth anniversary of medical practice. Speakers who paid tribute to the 78 year old physician included Drs Jonathan Forman, Columbus, Elliott D. Moore and John M. Smith, New Philadelphia, Daniel W. Shumaker, Dover, and Mr Charles S. Nelson, Columbus, secretary, Ohio State Medical Association.

Society News—Dr John A. Toomey, Cleveland, addressed the Columbus Academy of Medicine September 28, on 'Differential Diagnosis of Epidemic Meningitis and Other Meningeal Irritations'.—Dr Paul W. Palmer, Lorado, W. Va., addressed the Fayette County Medical Society, Washington Courthouse, September 3, on hemorrhoids.—Speakers at a meeting of the Miami County Medical Society in Troy, September 4, were Drs Lauren N. Lindenberger, Troy, on 'Indications for Cesarean Section' and George R. Upton, Piqua, 'Surgical Technic for Cesarean Section'.—Dr Raymond C. McKay, Cleveland, addressed the Mahoning County Medical Society, September 15, on 'Collapse Treatment of Pulmonary Tuberculosis'.—Dr Max M. Zininger, Cincinnati, addressed the Auglaize County Medical Society in St. Marys, September 17, on 'Diagnosis and Treatment of Acute Abdominal Emergencies'.—Dr Morris Fishbein, Chicago, editor of THE JOURNAL, addressed the Academy of Medicine of Cincinnati October 6, on 'New Plans for Medical Service'.

OKLAHOMA

Society News—Dr Henry H. Turner, Oklahoma City, addressed the September meeting of the Garfield County Medical Society at Enid on the endocrine glands.—At a meeting of the Southern Oklahoma Medical Association in Norman September 1 speakers were Drs Wendell Long, on 'Treatment of Menorrhagia', Raymond Murdock, 'Diagnosis and Treatment of Rectal Diseases', and Kelley West, 'Colles Fractures and Associated Fractures of the Wrist'. All the speakers are from Oklahoma City.

PENNSYLVANIA

Personal—At a meeting of the state board of medical education and licensure, August 27, James A. Newpher was elected secretary of the board to succeed Clarence L. Ackley.

Society News—Dr Grover C. Penberthy, Detroit, addressed the Erie County Medical Society, September 8, on 'Ten Years Study of Empyema in Children'.—Dr Walter F. Donaldson, Pittsburgh, secretary, Medical Society of the State of Pennsylvania, addressed the Dauphin County Medical Society, Harrisburg, September 2 on 'Social and Economic Problems Facing the Medical Profession Today'.—Dr Bernard J. Alpers, Philadelphia, addressed the Harrisburg Academy of Medicine September 15 on 'Nervous Complications Encountered in General Practice'.—Dr Charles A. Behney, Philadelphia, addressed the Cumberland County Medical Society in Carlisle in September on 'Excision of the Sympathetic Nerves for the Relief of Pelvic Pain'.

Philadelphia

Personal—Dr and Mrs David W. Levy celebrated their fiftieth wedding anniversary September 21.—Dr Edward Martin, Media, has been elected president of the Philadelphia board of education.

Society News—A symposium on prevention of tuberculosis will be presented before the Philadelphia County Medical Society October 14 by Drs Esmond R. Long, William G. Terhull and Frank A. Craig, Philadelphia and Edith E. MacFar-

Dexter, Harrisburg, state secretary of health — Speakers before the Obstetrical Society of Philadelphia October 1 were Drs Fred B Nugent, Reading Pa on 'The Prurient Genitalia After Forceps Delivery', Walter Sussman, 'A New Method for the Control of the Early Nausea and Vomiting of Pregnancy' and I Charles Lintgen 'The Incidence of Ureteral Stricture in Lower Abdominal Pain in Women' — Drs Arthur Finkelstein, Wilmington Del and George W Chamberlin addressed the Philadelphia Roentgen Ray Society, October 8, on 'Roentgen Studies of the Ischiopubic Junction' and 'Treatment of Hypophyseal Stalk Tumors by Evacuation and Irradiation' — At a meeting of the Philadelphia Academy of Surgery, October 5, speakers were Drs Isidor S Ravdin and Jonathan E Rhoads on 'Terminal Ileitis', Lynn M Rankin, 'Acute Fractures of the Pelvis' and George M Dorance, 'Treatment of Webbed Fingers Proper Age of Operation.' Dr Francis C Grant presented a memoir to the late Dr Charles H Frazier

Pittsburgh

Hospital News — The annual Mercy Day reunion was held at Mercy Hospital, September 24 with Dr Frank H Laher, Boston as guest speaker on disease of the gallbladder

Society News — Drs Harry M Margolis and Philip A Fain addressed the Allegheny County Medical Society September 15 on 'Clinical Use of Insulin Protamine' and 'Review of the Anesthetic Agents and Methods Used in 1936' respectively, and Dr Simon H Ratner reported a case of pulmonary mycosis

TEXAS

State Provides Quarters for Visiting Physicians — Through a provision of the appropriation bill passed by the last legislature graduate instruction for practicing physicians is to be made available at the State Tuberculosis Sanatorium, Sanatorium, and the sanatorium has built a cottage as a residence for the visiting physicians. The cottage was to be ready for occupancy October 1, with quarters for eight physicians. Special courses will be given in artificial pneumothorax, phrenic nerve operations and x-ray studies. The cost of the new building was about \$13,000

Society News — Drs Herbert M Westphal Weslaco and Loyal H Moore, McAllen addressed the Hidalgo-Starr Counties Medical Society July 16, on 'Undulant Fever' and 'Treatment of Common Diseases of the Middle and External Ear' respectively — Dr James M Hooks Paris addressed the Lamar County Medical Society, Paris July 2 on chronic ulcers — Drs William A. Smith and Seaborn J Lewis Beaumont discussed 'Epithelioma' and Laboratory Technic in Diagnosis respectively before a meeting of the Liberty Chambers Counties Medical Society, Anahuac, July 11 — Speakers before the Palo Pinto County Medical Society, Mineral Wells July 6 were Drs Joe H McCracken and Waldo B Lasater Mineral Wells on diseases of the thyroid gland — The Texas Public Health Association will hold its annual meeting in Kilgore October 14-16. Among speakers will be Drs Reginald M Atwater, New York, executive secretary American Public Health Association, John Rosslyn Earp state health officer New Mexico Santa Fe Howard R Dudgeon, Waco, president State Medical Association of Texas and Martha M Eliot Washington, D C, assistant chief, U S Children's Bureau — Dr Charles E Collins Waco addressed the Hill County Medical Society Hillsboro in September on 'The Heart in Surgical Mortality' — At the meeting of the Dallas County Medical Society Dallas, October 22 speakers will be Drs Thomas H Cheavens and Charles F Carter on 'Mental Disturbance Due to Bromide Intoxication and Addison Gerald Moore, Camden, Ind, on Hypertension and Cardiac Complications'

VERMONT

State Medical Meeting at Burlington, October 15-16 — The one hundred and twenty-third annual meeting of the Vermont State Medical Society will be held in Burlington October 15-16. A preliminary program lists the following speakers among others

Dr John H J Upham Columbus Ohio, President Elect American Medical Association Heart Disease in Middle and Past Middle Life
Dr Adolphus D Rood Springfield Mass Postoperative Pulmonary Atelectasis
Dr Royd R Sayers Washington D C Respiratory Dust Diseases
Dr Doris A Murray Washington D C Maternal and Child Health
Dr Franklin P Lowry, Newton Mass The Value of Physical Therapy in the Practice of Medicine
Dr Guy L Hunter Baltimore The Urinary Tract in Relation to Diagnosis of Abdominal and Pelvic Lesions

There will also be a symposium on vascular diseases with the following speakers all of Boston Drs Robert S Palmer

Theodore C Pratt, Robert R Linton, Henry H Faxon and Reginald H Smithwick Dr Lester W Burbank, Cabot, is president of the society

WEST VIRGINIA

Personal — Dr Jesse A Jamison has resigned as health officer of Fairmont after fifteen years' service. — Dr Rexford A Burdette, Charleston has been named director of the Monongalia County health department, succeeding Dr Robert C Farrier who recently resigned to accept a similar position in Delta County, Mich

University News — A college of pharmacy has been established at the University of West Virginia, replacing the former department of pharmacy in the school of medicine. Prof Joseph L Hayman, former head of the department will be director of the new college. Dr Jerome E Andes Warrensburg Mo, has been appointed assistant professor of pathology. Dr Andes graduated from the Louisiana State University Medical Center in June. In 1932 he received his degree of doctor of philosophy from Western Reserve University. He is 32 years of age.

GENERAL

Outbreaks of Typhoid — Seventeen cases of typhoid fever among workers on a highway project near Carlisle, Pa, were reported by newspapers September 15. There was one death. It was found that the workmen drank from a pipe line from a stream which was contaminated — Two deaths have occurred in an outbreak of forty-two cases at the Columbus State Hospital, Columbus Ohio, it was reported September 10 — Forty-nine cases with three deaths had occurred in the outbreak in Englewood N J, and surrounding towns up to September 22. This epidemic was attributed to a spring in Englewood

Special Broadcast on Y M C A Anniversary — The New York City division of the Young Men's Christian Association announces a special broadcast October 11 to observe the one hundred and fifteenth anniversary of the birth of Sir George Williams founder of the organization. Speakers in the broadcast, which will be from 4:30 to 5 p m eastern standard time, will include, among others, J Edgar Hoover, director of the Federal Bureau of Investigation, Dr Morris Fishbein, Chicago, editor of THE JOURNAL, Miss Mildred H McAfee president of Wellesley College, Wellesley, Mass and Eddie Cantor, Hollywood. The Y M C A was founded by Sir George in England ninety-two years ago

Bequests and Donations — The following bequests and donations have recently been announced

Pennsylvania Hospital Episcopal Hospital Home of the Merciful Savior for Crippled Children and the Home for Incurables Philadelphia are among institutions that will eventually receive one sixteenth of the estate of Frederick McOwen estimated at more than \$4,000,000

Montefiore Hospital New York \$1,000 from the estate of the late Ida H Saks

St Joseph's Hospital for Consumptives Bronx \$1,000 by the will of the late Ann Dillon

Pennsylvania Hospital Philadelphia \$21,000 by the will of Miss Emily Fell Dawson

St Luke's Hospital Chicago \$20,000 by the will of the late Mrs Grace Witbeck Barrell

Memorial Hospital for the Treatment of Cancer and Allied Diseases New York, \$50,000 to equip a cancer treatment room by the will of Mrs Mary L C Earle

Jefferson Medical College Philadelphia \$5,000 from the estate of the late Dr Thomas Macrae

Lebanon and Montefiore hospitals for chronic diseases New York \$1,000 each by the will of Rudolph H Abraham

St Joseph's Hospital Yonkers N Y \$1,000 by the will of Edward J Doran

Presbyterian and New York hospitals New York each \$2,201,491 by the will of the late Mary Gardiner Thompson

St Luke's Hospital New York \$42,500 National Society for Prevention of Blindness \$5,000 and the New York State Reconstruction Home West Haverstraw \$5,000 by the will of the late George Blagden St Luke's will also receive half the residuary estate after the death of named beneficiaries the estate was valued at nearly \$5,000,000

Public Health Meeting — The sixty-fifth annual meeting of the American Public Health Association will be held in New Orleans October 20-23. The preliminary program includes the following speakers

Dr John Sundwall Ann Arbor Mich Training of Vital Statisticians
Fred W Tanner Ph D Urbana Ill Problems in Food Preservation
Dr Thomas Francis Jr New York Epidemiologic Studies in Influenza
Dr Martha M Eliot, Washington D C Infant and Maternal Welfare from the Aspect of Social Security
Dr Royd R Sayers Washington D C Industrial Hygiene Activities in the United States
Dr William Lloyd Aycock Boston The Nature of Autacessologic Susceptibility to Polymyalgia

Special sessions will be devoted to mental hygiene advances in public health and mosquito-borne diseases. There will be symposiums on milk and dairy products enteric fevers syph-

ills, food poisoning, sanitation of eating utensils, and intestinal parasites, including protozoa. One session on public health education will be addressed by Mr Howard Blakeslee, science editor of the Associated Press, New York, on 'The Newspaper—Science in the Press—The Daily, the Weekly, and the Interests of the Readers of Each,' and Miss Judith Waller, educational director, central division, National Broadcasting Company, Chicago, "The Radio." The first general session will be held Tuesday evening, when Dr Thomas Parran surgeon general, U S Public Health Service, Washington, D C will deliver his address as president-elect of the association. On this occasion the winner of the Sedgwick Memorial Medal will be announced. The American Association of School Physicians, the Association of Women in Public Health and Delta Omega will also meet during this time.

FOREIGN

Survey of Rural Hygiene—A commission from the League of Nations is making a survey of rural hygiene in countries of the Far East preparatory to a conference to be held in Java in August 1937. Mr A S Haynes formerly colonial secretary in Malaya, is head of the commission, which visited the Philippine Islands in June and was to go later to the Dutch East Indies, Singapore and South India.

Traffic Signs Direct Travelers to Physicians—Directions for reaching the nearest physician are being added to traffic signs near dangerous curves and intersections in Czechoslovakia, according to a report to the U S Department of Commerce from the commercial attache in Prague. It is believed that the psychologic effect is excellent and that the information is of value in case of accidents. An inscription giving the location and distance to the nearest physician is placed below a red field in a blue frame.

Typhoid Outbreak at British Resort—Three hundred and eighty-five cases of typhoid were reported between August 21 and September 4 in Bournemouth, England, and two adjacent towns, Poole and Christchurch. It was found that the infection came from unpasteurized milk and treatment of the offending supply was begun at once. At Bournemouth it was necessary to take over a large house to provide extra hospital accommodations for the patients. Bournemouth had 222 with seven deaths, Poole 143 with two deaths and Christchurch 20.

Government Services

Changes in Public Health Service

Drs Ernest E Huber and Clifford R. Eskey have been promoted and commissioned as surgeon and senior surgeon respectively in the regular corps of the U S Public Health Service. Other changes in the service include the following transfers:

Passed Asst Surg Frederick Paul Buron relieved at Hamburg Germany on arrival of Sr Surg Herbert A Spencer and assigned to Naples Italy for duty in the office of the consul general.

Passed Asst. Surg Mason V Hargett relieved at Stuttgart and ordered to London England for duty in office of American consulate.

Surg Walter G Nelson relieved at Naples Italy and assigned to Berlin Germany.

Medical Director Claude H Lavinder relieved as chief medical officer of U S Marine Hospital Ellis Island N Y and directed to assume charge as director of public health district number 1 comprising the states of Maine New Hampshire Vermont, Massachusetts Rhode Island Connecticut New York and New Jersey.

Maryland and the Social Security Program

The plan of Maryland to provide care for its crippled children under the social security program was approved August 1. This makes thirty-seven states and the District of Columbia and Alaska with these plans. Eleven states and Hawaii have not yet been able to make adequate arrangements for participation, although in some cases the necessary preliminaries can be completed soon and grants under the 1937 appropriation made. During the first five months of the year \$732,492.33 was paid to the thirty-six participating states. Alaska and the District of Columbia. The sum available for apportionment during the fiscal year ending June 30 1937 is \$2,450,000 based on a specific allocation for all the states Alaska Hawaii and the District. A total of \$400,000 remains to be apportioned on the basis of the number of crippled children in need of care, relative costs of care and state funds available. This allotment cannot be made until all state plans for the period covered have been received.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 1 1936.

Report on the Treatment of Dementia Paralytica

The Mental Hospitals Committee of the London County Council has made an important report on the treatment of dementia paralytica. Because of its vast hospital system, the council has on this subject experience at its disposal on a scale impossible elsewhere. For some time Dr F L Golla, director of the central pathologic laboratory at the Maudsley Hospital, has been engaged in coordinating the treatment of dementia paralytica at all the council's hospitals, keeping records and following up the after histories of patients who were discharged after treatment. It is pointed out in the report that before the advent of modern therapy there was no real recovery from the disease. A few patients might linger on for a number of years, in exceptional cases for a long period, but the discharge rate was insignificant and the majority of patients died within a short time of admission. In the six years 1908-1913 there were 2,545 cases of dementia paralytica in the council's mental hospitals. Of these, 2034 (almost 80 per cent) proved fatal. The modern treatment was not then in use. Comparison is made with the six years 1930-1935, when 1,914 cases were in the hospitals and the modern treatment was used in every case in which this was possible. The untreated patients comprised those admitted moribund or suffering from grave physical disabilities which rendered active treatment impossible. Eighty-five per cent of the patients received some special form of treatment, 78 per cent pyrexial therapy with or without drug treatment, and 7 per cent drug treatment only. On Dec 31, 1935, 782 of the patients (40.8 per cent) had died, seventy-eight were taken out of the council's care, 379 (19.18 per cent) were discharged and 430 remained in the hospital. Comparison of the two series of cases shows that: 1 Even in the total of treated and untreated cases the mortality rate had been halved. 2 One fifth of the cases in the second series had been discharged, the cure in the majority being permanent. Many of the persons discharged are now filling positions of responsibility. 3 There is an increase of 208 in the resident dementia paralytica cases which is made up of cases in which the lethal progress has been arrested but the mental symptoms have not permitted discharge from care. The pyrexial treatment was carried out with malaria and drugs, the specific drug treatment, and by various preparations of arsenic and bismuth.

The Fitting of Artificial Limbs

The work of the ministry of pensions in providing artificial limbs for the victims of the great war has resulted in the creation of a highly specialized and efficient organization at Queen Mary's Hospital, Roehampton and affiliated centers throughout the British Isles. The unprecedented demand for limbs has been a stimulus to the production of improved technical devices and higher standards of material and workmanship which have been guided by the surgeons responsible for selecting the most suitable type and supervising the fitting. The specialized knowledge and experience acquired has been freely communicated to the medical profession. Lectures and demonstrations on amputation stumps and on the fitting of artificial limbs have been given to medical representatives at various public services and medical schools. During 1935 fewer than 132 surgeons attended these lectures. There has been a widely expressed wish that the benefit of the military service should be extended to civilians, which has already been

done in the case of civilians living near or in London. With a view to the extension of the benefits, the minister of pensions was requested to allow the services of the limb fitting surgeons in the provinces to be made available. They were consulted in the matter and their replies show that they recognize the deficiencies of the existing practice, in which the patients are largely dependent on the makers of artificial limbs whose knowledge of anatomy may or may not be adequate. The minister has therefore granted the request. Under an agreement to be entered into, fees will be charged which will cover all expenses incurred by the ministry of pensions. The new arrangement will not be allowed to interfere with the practice of any independent surgeon who may wish to supervise the adjustment of an artificial limb in a case in which he has been concerned or with the supply of artificial limbs by any firm of limb makers that it may be desired to employ.

The Influence of Diet on Caries

The Committee for the Investigation of Dental Disease appointed by the Medical Research Council has issued a final report. The earlier reports gave the results of Mrs. May Mellanby's well known experiments on animals and children which have been reviewed in previous letters. She produced a large mass of evidence to show that nutrition and not oral hygiene, as was supposed, was the main factor in the decay of teeth. She showed that the liability of a tooth to decay depended largely on the perfection of its structure, which in turn depended on nutritional influences during growth both antenatal and postnatal. She found that ill formed (hypoplastic) teeth were much more common than had been supposed. For their formation the teeth require adequate supplies of calcium and phosphorus, and an ample supply of vitamin D to ensure that these are put to use. The same factors control the health of the teeth during the rest of their lives and the healing of caries.

The general object of the investigation on which this final report is based was to test the theory that nutrition is the dominant factor in determining the structure of teeth and their resistance to decay, particularly the supply of specific food elements in early life. It was impossible to investigate all nutritional influences, so the test was confined to observing the effects of adding one factor to the diet of children—vitamin D, in the form of either cod liver oil or irradiated ergosterol. The investigations were made in three similar institutions in the neighborhood of Birmingham, maintained on the cottage home system under the poor law authority. The children were recruited from the poor of Birmingham and were from 5 to 14 years of age. They were well cared for and well fed according to the recognized standards. The effect on the initiation and spread of caries of adding vitamin D and other substances to the basal diet was observed. For this purpose the children were divided into three groups, to which an addition in the diet was respectively made of treacle, olive oil or cod liver oil. The quantity varied according to age. Thus for children from 5 to 8 years of age the quantity of treacle varied from 28 to 42 Gm., of olive oil from 14 to 21 cc., and of cod liver oil from 14 to 21 cc. The incidence of carious cavities in freshly erupted teeth was 12 per cent in the cod liver oil group which was only half that in the treacle group and two thirds that in the olive oil group. In the deciduous teeth the protective action of the cod liver oil was not so well marked. It is claimed that this elaborate investigation shows conclusively that a relatively high vitamin D content of the food can do much to diminish the incidence of caries if given during the development of the teeth, that a beneficial effect may be obtained if the vitamin is given at a fairly late stage of development and that even when it is given after the eruption of the teeth the onset and spread of caries is delayed.

Instruction in Protection Against Air Raids and Poison Gas Attacks

National schemes for the protection of the civil population in cases of air attack are being actively prepared by the air raids precautions department of the government in cooperation with local authorities. It is realized that the range, speed and capacity of modern aircraft enable sudden attacks to be made on a heavy scale, which would cause great damage if there should be no previous organization to deal with the situation. Although a convention exists prohibiting the use of gas in war, the possibility of its being violated, as in the case of Abyssinia, cannot be ignored. It is with regard to this that the interest of the medical profession is particularly desired. The air raids precautions department has discussed the whole position with the General Medical Council, the British Medical Association and the deans of the medical schools. A scheme has been devised to cover the instruction of graduates, undergraduates and nurses. Specially selected and trained physicians will conduct special courses under the auspices of the deans of the medical schools, the British Medical Association and the General Nursing Council. The courses will be both theoretical and practical, including experience in wearing a modern type of respirator in actual gas. Courses will consist of some six or eight attendances. The instructors will travel about the country with special equipment to give the necessary instruction at convenient centers. The courses will be open to any registered physician, dentist or nurse.

Replying to an attack by the opposition stating that precautions against air attacks were inadequate Mr. Lloyd, under secretary to the home office, said in the house of commons that the two main classes of poison gas were the persistent and the nonpersistent. The nonpersistent would disperse naturally in a short time. The persistent were vaporized liquid and would contaminate an area and have lethal effects for several days unless steps were taken to prevent this. Prominent among the precautions were a warning system and control of public lighting. A trained service capable of finding out when gas was about and what gas it was was necessary. The decontamination of material from persistent gases should be performed. The government had sought the cooperation of the local authorities with regard to the provision of these services and the response had been satisfactory. Instruction was being given to persons who might have to undertake special duties in an emergency. Since the opening of the antigas school in April, 150 instructors had been given first-class certificates. The demand for instruction was so great that accommodations had to be doubled and another school of similar capacity erected in the northern part of England. Already all the instructors for the metropolitan police had been trained and instruction of the force was in full swing. In connection with this training the government had ordered forty mobile antigas chambers. The new respirator was 100 per cent efficient against all the gases known to the government and likely to be used in warfare. No other country was making such comprehensive provision for the protection of the civil population.

Professors Support Peace Campaign

Professors of psychology, anatomy and genetics are among the men of science who have signed the following statement on "Science and War," issued by the International Peace Campaign, London. "No scientist who reflects upon the uses to which his work is put can fail to recognize that the world is now faced with an unescapable choice—whether science shall be used for the benefit or the destruction of humanity. The International Peace Campaign has the support of thousands of articulate scientific workers in many countries who would like to be helping to build up a world of peace and friendship among the peoples but who day by day, see instead the restric-

tion and evil application of their labors" The signatories include Prof W E Le Gros Clark (anatomy, Oxford), Prof J B S Haldane (genetics, London), Assistant Professor J C Flugel (psychology, London), Julian Huxley (secretary, Zoological Society of London), Prof V G Childe (prehistoric archeology, Edinburgh), Prof H Levy (mathematics, London) and Prof T H Pear (psychology, Manchester)

PARIS

(From Our Regular Correspondent)

Aug 29, 1936

Maternity Insurance

Supervision of insured women workers during pregnancy and parturition and that of nurslings has always been delegated to private organizations by the social insurance authorities, who distributed the necessary funds. Up to the present the diagnosis of pregnancy has had to be made after the fourth month and an antepartum examination carried out once a month thereafter. To encourage the women to go to the antepartum clinic regularly, an additional sum was granted to the assured. Every month following delivery, the mother was obliged to bring her infant to a nursing clinic, where an allowance was granted for cow's milk if it was needed to supplement the maternal feedings or if the latter was impossible. All of these were optional on the part of the assured during the antepartum and postpartum period, the underlying idea being that in view of the extra amounts paid by the caisses or insurance offices, the women would visit the clinics regularly during the antepartum period and bring their babies more frequently to the nursing clinics. Evidently this voluntary method was unsatisfactory, so that since Oct. 28, 1935, no allowances have been given during or after pregnancy unless the visits to antepartum and postpartum clinics are controlled by the caisses. In other words, supervision is obligatory if the women wish to receive insurance premiums during and after pregnancy.

A total of about \$20 is allowed for antepartum care. The first consultation must not be made later than the fifth month and includes a radioscopia, a Wassermann test, a urinalysis and as complete a general medical examination as possible. For a normal delivery the sum of 300 francs is granted, this amount being increased in cases of dystocia according to the nature of the complication.

Dr Dordives, in the August 15 *Siccle medical* believes that these new regulations will be a hardship for physicians in many rural districts, because the assured will be allowed to go to certain antepartum clinics only in larger centers and thus a large number of office consultations will be lost. In addition comparatively few physicians in smaller cities have the diagnostic resources at their disposal which the new law requires. Thus a new conflict will arise between the social insurance authorities and the medical profession unless the antepartum and postpartum centers to be established by the caisses or insurance bureaus will be satisfied to limit their task to diagnosis and then to refer the patients to their local physicians. The antepartum centers ought not to attempt either to treat those who are now obliged to consult them during the antepartum and postpartum periods or to refer them to some free or pseudo free institutions. The same question arises in connection with the general diagnostic centers which the social insurance authorities have proposed to open in all parts of the country.

Operative Results in Hyperthyroidism with Cardiac Complications

Team work on the part of two cardiologists, Lian and Gaquiere and a surgeon Welti in the management of severe cardiac complications of hyperthyroidism is well illustrated in a paper read at the June 3 meeting of the Academie de chirurgie of Paris. The forty-five cases were chosen from a

total of 450 cases of hyperthyroidism in which Welti recently operated, so one can say that cases presenting severe cardiac complications constitute about 10 per cent of the total number. The forty-five cases can be divided clinically into (a) seven complete arrhythmias (auricular fibrillation) without cardiac insufficiency, (b) thirty-six cases of cardiac insufficiency (eleven hypostoles, three left ventricular insufficiencies and twenty-four severe asystoles), twenty-four of the thirty-six patients in this group having a complete arrhythmia (auricular fibrillation), (c) one case of angina pectoris and (d) one case of paroxysmal tachycardia.

The authors are of the same opinion as the majority of French and American surgeons, that severe cardiac complications are more frequently encountered in cases of toxic adenoma than in exophthalmic goiter proper. They are also more frequent in men than in women: there were nine males to one female in the forty-five cases of cardiomyosis. To obtain a satisfactory result in the latter, the operative removal should be an extensive one, hence subtotal thyroidectomy was performed in all except one patient, who refused further operation after a preliminary ligation, and three others on whom a complete thyroidectomy was carried out. None of the forty-five patients died in spite of the severe character of the cardiac condition.

A study of their cases has convinced the authors that cardiac complications are dependent, first, on the duration and intensity of the hyperthyroidism and, secondly, on the existence of cardiac lesions either as an associated condition or independent of the hyperthyroidism. Associated cardiac lesions are uncommon, but they persist even though the symptoms of hyperthyroidism have disappeared following thyroidectomy. The more important associated lesions are arteriosclerosis, hypertension and valvular lesions. Of these, the first two appear to be of chief importance, hence one encounters cardiac complications more frequently in elderly patients, the average age being 50 years in the cases in which such associated lesions existed. In cases of toxic adenoma the intensity of the hyperthyroidism, at the period when cardiac complications appear is in certain cases relatively unimportant. On the other hand, in the true case of exophthalmic goiter the intensity of the hyperthyroidism is the most important factor in the genesis of the cardiac complications that appear in younger patients.

In complete arrhythmia with auricular fibrillation, and this is the most constant finding in cardiomyoses operative intervention is followed by cure in half of the cases. Two factors influence these results: the duration of the arrhythmia and the coexistence or absence of cardiac insufficiency as well as its intensity. Return of sinus rhythm is sometimes delayed following operation. Quinidine sulfate has proved to be of great aid in regularizing the rhythm. In cardiac insufficiency of hyperthyroid origin the subtotal operation is followed by very gratifying results.

A study of end results in thirty-three cases revealed only four failures. In three of these improvement of the cardiac insufficiency was transitory, then the asystole recurred and the fourth patient died of pulmonary embolism three months after operation, at a period when marked improvement had already appeared.

The results in cases of hypostole are very much better than in patients with asystole. In the latter group of nineteen cases the result is perfect in seven, the asystole having completely disappeared and the orthoradiogram having returned to normal dimensions. In nine other patients the functional result is satisfactory but auricular fibrillation persists and the orthoradiogram remains unchanged. In a third subgroup of asystoles death occurred in three cases eighteen months, three years and five years after operation, without any amelioration of the cardiac condition.

To explain the failure of surgical treatment one must take into consideration not only the severity of the cardiac com-

cation but also the existence of associated cardiovascular lesions. The latter, however, are not a contraindication to operation. On the contrary, they are an indication, as shown by the authors.

A secondary total thyroidectomy is of no avail in improving the end results, and there is the additional risk of injury to the recurrent laryngeal nerve and may be followed by thyroid insufficiency. The earlier a subtotal thyroidectomy is performed, the more favorable will be the end results in cases of severe cardiac complications of hyperthyroidism.

A Series of Cases of Botulism

Five cases of botulism have been reported three at the May 29 and two at the June 12 meeting of the *Société médicale des hôpitaux de Paris*. The two cases were reported May 29 by Gilbert-Dreyfus, Ravina and his associates as following the ingestion of canned spinach and involved a man aged 41 and his daughter aged 11 years. The former had diabetes, which condition was not aggravated by the botulism but made a diagnosis difficult at the onset because of the resemblance of the clinical picture to an acidosis due to the diabetes. Guinea-pig inoculation of some of the contents of the can of spinach revealed the presence of *Bacillus botulinus*. The symptoms of intoxication were especially severe in the daughter. Remarkable improvement followed the use of the botulinus anatoxin and antibotulinus serum. The three additional cases, reported by Etienne May and his associates, followed the ingestion of smoked ham by all three of the patients. The first patient was given both the anatoxin and the serum, but the authors were unable to say whether or not recovery was due to this treatment. In the second case the use of strychnine and pilocarpine alone was successful, but the recession of symptoms was much slower than in the case in which the botulinus anatoxin and antibotulinus serum had been given.

BERLIN

(From Our Regular Correspondent)

Aug 11, 1936

Group Roentgenologic Examinations for Tuberculosis

The results of the examination of a large group of young men were reported in *THE JOURNAL*, Feb 22, 1936, page 639. The *Oeffentliche Dienst* has just published the results of several other such examinations and these data are submitted as supplementary to the earlier material. The examinations in question took place at two of the work camps in central Germany. In one camp (A) 930 young men were examined, in the other camp (B) 4,143 young men. The results are given in the accompanying table.

Calcified primary foci and similar glandular tubercles are not included in the table. Among "pleural conditions" are reckoned the most unrelated types of adhesions and other anomalies under "other miscellaneous conditions" are grouped cases of minor bronchopneumonia, insignificant cordlike scarred fields and so on.

The positive results appear relatively trivial, since in only 0.86 per cent and 0.67 per cent respectively were tuberculous conditions established that could not be detected simply by the usual auscultation and percussion of the thorax. The figures are lower than those hitherto yielded by examinations of students and of soldiers. Several examinations of students revealed 0.8 per cent to be actively tuberculous, nearly double the proportion shown in the foregoing figures. An examination of the members of a detachment of artillery (that is, of a regular army group in which the men had enlisted for long periods) in 1932 disclosed 0.56 per cent of the men actively tuberculous, the proportion of open cases being 0.28 per cent of the active. Furthermore, a roentgenologic examination of 1,369 policemen

showed six open and seventeen healed cases of the disease, in other words, 1.68 per cent of clinically undetectable cases were shown to be present. It may be surmised from these last startling figures that but for the protracted unsuspected presence of carriers of contagion among their comrades many of these men might not have become infected with tuberculosis. The higher proportion for students, soldiers and policemen can be explained by the fact that the average age of the two last named groups was above 21 years, greater for the most part than that of the youths of the work camps. According to the most experienced of the group examiners it is precisely in the older age classes that one encounters the very conditions the detection of which forms the principal objective of group examinations.

The data were further augmented by another report of the roentgenologic examination of a group. In this instance the clinical examination undertaken previous to the roentgenologic

Tuberculosis in Work Camps

	Camp A		Camp B	
	Cases	Per centage	Cases	Per centage
Active pulmonary tuberculosis	4	0.43	13	0.31
Cases of open tuberculosis	2	0.22	5	0.12
Inactive cases	4	0.43	15	0.36
Pleural conditions	6	5.9	76	1.80
Other miscellaneous conditions	51	5.5	23	0.56

had for the most part failed (in contrast to the foregoing figures for camps A and B). The youths hailed from the same region as those of camp B and were likewise candidates for the work service, but for the volunteer service in the years 1933 and 1934 (work service is today compulsory). Among a total of 1,567 men there were nine cases of active tuberculosis (0.57 per cent), three open cases of tuberculosis (0.19 per cent) and twelve cases of inactive tuberculosis (0.77 per cent). The total number of men presenting pathologic tuberculous conditions was accordingly twenty-one (1.34 per cent of the candidates).

All these data clearly demonstrate the importance of the group roentgenologic examination of youthful campers.

Research on the Alteration of Ferments in Syphilis

Professor Marchionini of the Dermatologic Clinic of Freiburg-in-Breisgau has sought to improve the diagnostic methods for syphilis by research on ferments. (Berta Ottenstein was his assistant in this work until the well known laws against non-Aryans forced her to leave her post.) The investigations have yielded noteworthy results. The alterations in the ferments were first studied as manifestations of chemical transformation within the skin of syphilitic subjects. The skin of the back of a hand of a healthy person was exposed for five minutes to the action of 5 cc of water contained in a bell jar which covered 5 sq cm of skin surface. The presence of various ferments could then be detected in this cutaneous dialysate: diastase, peroxidase and in exceptional instances, arginase. The same cutaneous experiment undertaken with syphilitic subjects elicited important variations from the ferment economy of the normal subject: an increase in diastase was noted, peroxidase disappeared completely and arginase, so seldom encountered in normal subjects, appeared with regularity. It appears therefore that the skin undergoes profound alterations during its attempt to ward off the spirochetes and their toxins. In addition these modifications may also probably be interpreted as indicative of visceral involvement. The increased value of the arginase in particular bespeaks a process in the cutaneous areas that compensates for the loss of arginase by the liver as a result of spirochetal activity.

The ferments in the cerebrospinal fluid also were studied. In syphilitic subjects there was no characteristic alteration in the arginase content but diastase underwent a manifest decrease even to complete disappearance, peroxidase, on the other hand, exhibited a substantial and well nigh regular increase. The observations in the cerebrospinal fluid were thus precisely the reverse of those in the cutaneous dialysate, which led Marchionini to conclude that the spirochetes and their toxins may exert an entirely different type of influence on the chemistry of the central nervous system.

Further experimentation proved that it is actually the spirochetes and their toxins that induce the foregoing extensive alterations in the chemistry of the ferments. In addition to the data on living subjects, analyses of the brains of deceased paralytic persons exhibited almost without exception a complete absence of diastase in those areas which had been most affected, notably the cortical region of the forebrain. Similarly living spirochetes obtained from tissue juice in the cutaneous nodules of syphilitic subjects during the first months of the illness were regularly observed to destroy completely the diastase content of normal cerebrospinal fluid. All these experiments were submitted to checking by necessary controls.

These methods of determining the presence of ferments are based on sensitive reactions and they can be of service to practical diagnostics. The foregoing ferment alteration in the cutaneous dialysate is apparent in the first weeks of syphilis before the Wassermann reaction has become positive and can be demonstrated at every stage of the disease, including the late period. Further, it is more sensitive than the majority of methods for the detection of syphilis. The same thing may be said of the characteristic alteration in the cerebrospinal fluid; it too is already manifested in the earlier stages of the disease by a large proportion (as high as 70 per cent) of patients and also quite frequently in the later stages by patients in whom other methods of detecting the syphilis have failed. Marchionini emphasizes that, in addition to technical improvements in the diagnostic procedures, follow-up examinations should be instituted in a greater number of specializing clinics.

ITALY

(From Our Regular Correspondent)

July 31, 1936

Medical Conventions

The conventions of the medical societies "Gruppo cardiologico italiano" and "Gruppo per lo studio del ricambio" have recently taken place at the medical clinic of the University of Milan. At the meeting of heart specialists, Professor Foa spoke on physiopathology of the vasosensory zones. The results of experiments carried out in this field are conclusive. The fact that arterial hypertension and hypotension originate in hyperesthesia and hypesthesia, respectively, of the carotid zones is beyond question. Many factors, among which are the conditions of the renal circulation and the postural changes of the individual, take part in the production of reflexes. The vagal and sympathetic nervous systems are also reflexogenic factors of importance. The speaker however does not admit the theory of Danielopolus autotropism. Many a fact that has been proved by experiments cannot be applied to the clinical field in relation either to the diagnosis or to the treatment of certain pathologic conditions. In this connection the speaker does not agree with Professor Pandes' advice of sectioning the splanchnic nerve in the treatment of arterial hypertension.

Professor Benedetti spoke on the methods proposed for quantitative evaluation of the morphology and functions of the heart. The speaker made determinations of the form, position and size of the heart of 300 men and 300 women by means of roentgenograms taken in anterior, posterior and lateral views with application of Viola's serial method. From the study of

the several diameters he made an index which represents the functional cardiac value. There are types of deformations of the index to show mitral stenoses, mitral insufficiency and aortic insufficiency; there are other types of deformity in plural valvular heart diseases, showing the existence of equilibrium between aortic and mitral insufficiency or the predominance of aortic insufficiency over mitral insufficiency and vice versa. In arterial hypertension the enlargement of the left ventricle can be seen only in the lateral view. In roentgenograms of patients suffering from exophthalmic goiter the left ventricular contour appears enlarged and the left middle arch of the roentgenogram appears prolonged or, rather, there is an increase of the left ventricle. According to the speaker, Viola's cardiac index which consists in calculating the frequency of the pulse and of respiration after performance of ten movements of flexion of the body and a running of 150 meters in eighty seconds is of great value in the clinical study of the functions of the heart and also in making determinations of the arterial pressure and in taking electrocardiograms. For quantitative evaluation of the functions of the heart in patients who are unable to run and climb stairs, the following method can be used: performance of rhythmic elevations of the extremities both in natural conditions and carrying certain weights. Professor Pace pointed out the danger of the test of carrying weights which can cause serious accidents in certain patients suffering from heart diseases.

At the meeting of physicians specializing in metabolic diseases Professor Quagliarello of the Naples University explained the transformations of the lipids in the body, the organs concerned with transformative processes and, especially, the intermediate metabolism. The speaker and his school found by extensive researches that the endocrine glands, especially the hypophysis, play an important part in the processes related to the fat metabolism and that the latter is related with the metabolism of the proteins and of the carbohydrates.

Professor Zoia spoke on the treatment of diabetes in ambulant patients. The theory that hyperglycemia originates mainly in disturbances of the islands of Langerhans still stands although it is modified in the sense that the dysfunction of the islands of Langerhans is always associated with dysfunction of other organs. Because of the fact that the pancreas is the main pathogenic factor of diabetes mellitus, the disease can be considered as a uniglandular disturbance with pluriglandular reflexes. Satisfactory results in the treatment of the disease are obtained only by diet and by injections of insulin. The latter substance administered by mouth, and the commercial preparations known as antidiabetics, lack efficiency in the treatment of the disease. Recently the percutaneous route has been used for administration of insulin, but conclusions as to the results cannot as yet be drawn. Insulin protamine is now in use in some countries, especially the United States, but its use has not been as yet introduced in Italy. The ambulant treatment can be used more frequently than it is actually used. Many patients are treated in this form at the clinic of Milan.

Welfare for Mothers and Children

The statistics of the national organization Opera nazionale per l'assistenza alla maternità e all'infanzia which is concerned with the public welfare of Italian mothers and their children, show that the number of cases cared for in 1935 was 46 per cent higher than in 1934. The antepartum and postpartum care of mothers and their babies has been intensified. The number of centers for the protection and assistance of mothers and their children increased to a total number of 9,404 up to December 1935. Special courses of puericulture for physicians and midwives as well as courses for nurses paid for by the national organization have been established. The number of mothers and children who were under care of the organization during

1934 and 1935 was 1,713,978. The number of treatments given during 1934 and 1935 was 3,686,220. The donations given to the organization in 1935 amounted to more than a million dollars.

Number of Workers in Medicine

Recent statistical studies have shown that the number of persons practicing medicine or working in fields connected with medicine and its branches in Italy is as follows: 35,651 physicians, 12,912 pharmacists, 4,174 veterinarians, 15,982 midwives and 6,909 nurses. Of the total number of physicians, 9,390 are municipal physicians. From a comparison of the present statistics with those made in 1927 it is seen that the number of physicians increased by 5,567; that of pharmacists by 359 and that of veterinarians by 559. The number of midwives is almost unchanged.

NETHERLANDS

(From Our Regular Correspondent)

Aug. 5, 1936

Cataract and Dinitrophenol

Van der Hoeve and Polak Damels have published a warning in the *Nederlandsch tijdschrift voor geneeskunde* against the dangers of dinitrophenol. The authors describe a case observed by them, of cataracta matura of both eyes resulting from absorption of some 40 Gm of dinitrophenol. The drug had been absorbed in the course of two distinct periods and at no time had the normally prescribed daily dosage been exceeded. From April 1934 to June 1934 the patient swallowed a capsule of 100 mg three times a day, a total for the period of 22.5 Gm; then from September 1934 to January 1935 an additional total of 18 Gm was absorbed. The initial symptoms appeared in June 1935, several months after the patient had ceased to use the drug. There was no other possible explanation for the development of the cataract.

Tropical Diseases in the Indies

Speaking at the University of Amsterdam, Dr. Brug discussed the present state of tropical pathology in the Dutch East Indies. He pointed out that few of the tropical maladies encountered in the Indies are autochthonous and that an understanding of the reasons for this is necessary if all possible avenues by which the diseases might be introduced into these colonies are to be brought under surveillance. The explanations are complex. Certain tropical diseases could never be imported into the Indies—African sleeping sickness (Congo trypanosomiasis) is an example in point. This disease is transmitted exclusively by the tsetse fly and this insect as well as the disease are not to be found outside Africa.

Schistosomiasis is found in Asia, Africa and America but not in the Dutch East Indies or Australia, because the species of snails that act as host is lacking. Certain other verminous diseases are unable to gain a foothold in the Indies because the living habits of the people protect them against such infection. Dracunculiasis (the disease caused by *Dracunculus medinensis*) is found only among populations who drink polluted and stagnant water, whereas the inhabitants of the Dutch colonies avoid such contamination. Clonorchis and the Paragonimus (or lung fluke) attack only eaters of raw or nearly raw fish, but uncooked fish is not eaten in the Dutch Indies. Yellow fever is not found there; the lightly clad population is not infected by fleas. To date *Loa loa* and *Onchocerca* have not been imported into the Indies. The reasons for the absence of kala-azar and yellow fever are not known.

The precise manner in which kala-azar is transmitted is not yet understood, but this cannot be said of yellow fever. The latter disease prevails over a great part of Africa but has not yet spread to the East Coast. The infected mosquitoes, however, can be transported great distances by the airplane.

Marriages

FRANKLIN STAFFORD WEARN, New York, to Miss Mildred Field King of Jackson Heights, Long Island, N. Y., June 27.

ERNEST CARL MARGARET, Glenwood, Iowa, to Miss Violet E. Hansen of Oakland, Calif., in Council Bluffs, Iowa, June 3.

LAWRENCE N. WATHIER, Atkinson, Ill., to Miss Madeline Goering of Walcott, Iowa, in Davenport, Iowa, June 6.

RICHARD HARPER WHITAKER, Kernersville, N. C., to Miss Martha Louise Hubbard of Marshallton, Pa., June 17.

SHERMAN S. GARRETT, Champaign, Ill., to Miss Virginia Hailey of Kansas City, Mo., Carlinville, in June.

HENRY FREDERICK STEPHENS to Miss Mary Emma Van Benschoten, both of Providence, R. I., July 7.

JOHN CRAWFORD HOLMAN JR., Franklin, Texas, to Miss Margaret McKinzie of New Orleans, June 20.

JOHN F. STRECKER to Miss Winifred Smith, both of Providence, R. I., in Fall River, Mass., June 20.

GEORGE GIBSON MOORE, McColl, S. C., to Miss Bonner Lipscomb of Ninety-Six, at Clinton, in July.

CHESTER E. HABERLIN, Stratford, Conn., to Miss Marian Kathryn Page of Bridgeport, June 11.

ROGER F. SONDAG, East St. Louis, Ill., to Miss Mary Jo Gualdoni of Murphyboro, June 30.

FRANCIS KEITH BRADFORD, Chicago, to Miss Margaret Anne Bowles of Richmond, Va., recently.

GEORGE L. JONES, Wanamaker, Ind., to Miss Martha Elizabeth Piel of Indianapolis, June 20.

LOREN LEONOTH LOVE, Valer, Ill., to Miss Thedis Wente of Johnston City, in Benton, recently.

JAMES A. ROBERTSON, Brooklyn, to Miss Cecile Florence Burns of Ossining, N. Y., June 27.

JOHN BERNARD CHRISTIE, Champaign, Ill., to Miss Marie Anna Sturdyvin in Peoria, in July.

LELAND MANN JOHNSTON to DR. HELEN MOORE PRESLEY, both of Nashville, Tenn., June 27.

RALPH KENNETH SHIELDS, Bethlehem, Pa., to Miss Mildred Mary Lyle of Columbia, June 20.

PHILIP FREDERIC SCHNEIDER to Miss Kathryn Ann Lantz, both of Evanston, Ill., June 17.

JOSEPH A. ROBINSON to Miss Elizabeth Arnold White, both of Bluefield, W. Va., recently.

FRED GRANT PEGG to Miss Pauline Amanda Sink, both of Winston-Salem, N. C., July 4.

SETH M. B. SMITH, Wausau, Wis., to Mrs. Elsa Kircher of Hollywood, Calif., June 22.

EDMOND L. RICE Soochow, Kiangsu, China, to Miss Mary O. Holler of Shanghai, June 29.

OVER SECKINGER GROSS, Vidalia, Ga., to Miss Bill Jones of Ludowici, in Alma, July 12.

ROBERT EDWARD TIMBERLAKE to Mrs. Johnnie R. Smith, both of Richmond, Va., June 29.

ROBERT FISKE WARREN to Miss Lucy Marie Sinclair, both of Brooklyn, July 2.

JOSEPH P. WILD, Hancock, Wis., to Miss Cecelia Wolf of Kaukauna, June 20.

OLIVER M. LAYTON to Miss Ruth Murphy, both of Fond du Lac, Wis., recently.

JOHN A. THRAWON to Miss Josephine Price, both of Milwaukee, July 11.

GUSTAVE F. WEBER to Miss Shirley Scales, both of Marshall, Texas, recently.

WILLARD W. WILD, North Charleston, S. C., to Miss Christine Daniel, June 6.

GEORGE M. WATT to Miss Dorothy Mattern, both of Cleveland, in July.

EDWARD J. SMITH to Mrs. Susie McCranie, both of Hahira, Ga., recently.

AUGUST FINCKE to Miss Emma M. Wagner, both of Brooklyn, June 30.

FREDERICK STEIN to Miss Harriett Stricker, both of Chicago, August 16.

HUGH J. HALL, Providence, R. I., to Miss Helen Thompson, June 28.

Deaths

Henry Parker Newman, professor of gynecology, emeritus at the University of Illinois College of Medicine, Chicago, died, September 21 of coronary occlusion, at his home in San Diego, Calif. aged 82. Dr. Newman was born in Washington, N. H., Dec. 2, 1853. He obtained his preliminary education at the New London (N. H.) Literary and Scientific Institution and later attended Dartmouth College. In 1878 he received the medical degree from the Detroit Medical College, and later, for two years studied at universities in Bonn, Leipzig and Strassburg. In 1880 Dr. Newman located in Chicago. He became professor of obstetrics and clinical gynecology at the College of Physicians and Surgeons of Chicago, of which institution he was also treasurer and member of the board of directors. At one time he was professor and emeritus professor of gynecology at the Chicago Polyclinic and one of the founders, president and professor of gynecology, Post-Graduate Medical School and Hospital of Chicago and was president of the laboratory of experimental research while it was part of that institution. From 1894 to 1904 he was treasurer, chairman of the Section on Obstetrics and Diseases of Women from 1900 to 1901 and a member of the House of Delegates from 1916 to 1918 of the American Medical Association. He was an Affiliate Fellow of the American Medical Association at one time vice president of the Chicago Gynecological Society and one of the founders and a fellow of the American College of Surgeons. He was a member of the Gorgas Memorial Institute of Preventive Medicine, Washington, D. C., a founder of the *Congres Périodique International de Gynaecologie et d'Obstetricue* and in 1890 a delegate to the Tenth International Medical Congress in Berlin. He was consulting surgeon and gynecologist to the San Diego County and Mercy hospitals, San Diego, and the Scripps Memorial Hospital and Clinic, La Jolla. He established and was president and surgeon-in-chief of the Marion Sims Sanitarium was formerly on the staffs of the Chicago Post Graduate St. Anthony's, Chicago Maternity West Side and St. Elizabeth's hospitals, Chicago. In 1894 he was awarded the honorary A. M. degree by Dartmouth College.

Francis Joseph Quinlan, Amawalk, N. Y. College of Physicians and Surgeons, Medical Department of Columbia College, New York 1878. member of the Medical Society of the State of New York, formerly emeritus professor of laryngology and rhinology at the Fordham University School of Medicine, New York, and the New York Polyclinic Medical School and Hospital at one time on the staffs of the City Hospital, St. Vincent's Hospital and the New York Foundling Hospital, New York and the Jamaica (N. Y.) Hospital, aged 83, died, July 24, of diabetes mellitus and arteriosclerotic heart disease.

Samuel Robert Cunningham, Oklahoma City Medical College of Indiana Indianapolis, 1899. professor of orthopedic surgery at the University of Oklahoma School of Medicine, member of the Oklahoma State Medical Association, American Orthopedic Association and the Clinical Orthopedic Society, fellow of the American College of Surgeons, aged 64, chief of the orthopedic staff, State University Hospital and Crippled Children's Hospital, consulting surgeon and head of the orthopedic department St. Anthony Hospital, where he died, September 7.

Charles B. Finefrock, Port Clinton, Ohio. Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster 1895. member of the Ohio State Medical Association, past president of the Ottawa County Medical Society, county health commissioner from 1920 to 1936, past president of the Northwestern Ohio Health Commissioners Association at one time member of the school board and county coroner, aged 64, died suddenly July 1 of coronary thrombosis.

Joseph Jeremiah Kane ♂ Binghamton, N. Y. University of Pennsylvania Department of Medicine Philadelphia 1903. past president of the Broome County Medical Society, fellow of the American College of Surgeons, member of the board of education and past president of the city board of health on the staff of the Binghamton City Hospital, past president of the Broome County Tuberculosis Hospital Chenango Bridge, aged 57, died July 18, of chronic myocarditis and cerebral hemorrhage.

Laurence Stephen Otell ♂ Washington, D. C. Johns Hopkins University School of Medicine Baltimore, 1925. instructor 1928-1930, assistant professor 1930-1933 and associate professor of radiology Georgetown University School of

Medicine, 1933-1936, on the staffs of the Georgetown University Hospital and the Gallinger Municipal Hospital, aged 39, died, July 27, at his home in Bethesda, Md., of leukemia.

John Ryan Devereux, Chevy Chase, Md., University of Pennsylvania Department of Medicine, Philadelphia, 1897. veteran of the Spanish-American and World wars, at one time served as a captain in the medical corps of the U. S. Army and was connected with the U. S. Public Health Service formerly instructor in medicine and clinical professor of medicine, Georgetown University School of Medicine, Washington, D. C., aged 68, died, July 2, of cerebral hemorrhage.

Leonard Pearsons Sprague ♂ Chateaugay, N. Y. University of Vermont College of Medicine, Burlington, 1906. past president of the Franklin County Medical Society, served during the World War, for many years president of the board of education and health officer of the village and towns of Chateaugay and Burke, member of the staff of the Alice Hyde Hospital, Malone, aged 56, died, July 14, of cerebral hemorrhage.

George Thornhill Harris, Madison Heights, Va. Kentucky School of Medicine, Louisville, 1898, member of the Medical Society of Virginia, for many years a member of the school board, and the county board of health, on the staff of the State Colony for Epileptics and Feeble-minded, Colony aged 60, died suddenly, July 16, of angina pectoris.

Percival J. Herman, Selinsgrove, Pa. Cincinnati College of Medicine and Surgery, 1876, member of the Medical Society of the State of Pennsylvania, past president and secretary of the Snyder County Medical Society, bank president, formerly county coroner and member of the state legislature, aged 84, died, July 15, of carcinoma of the prostate.

Jacob Polevski ♂ Newark, N. J., University and Bellevue Hospital Medical College, 1909, research associate in cardiology at the University of Pennsylvania Graduate School of Medicine, Philadelphia, attending physician and cardiologist to the Newark Beth Israel Hospital, aged 52, died, July 27, in the Johns Hopkins Hospital, Baltimore.

Dean Samuel Harrison, Yorkville, N. Y., Albany Medical College 1899, member of the Medical Society of the State of New York, formerly mayor, and school and village health officer of New York Mills, member of the staff of the Tuxton Hospital, Utica, aged 61, died, July 25, of coronary occlusion and arteriosclerosis.

Henry Theodore Nippert ♂ St. Paul, Miami Medical College, Cincinnati, 1891. president of the Ramsey County Medical Society in 1916, formerly clinical instructor in medicine, University of Minnesota Medical School Minneapolis, on the staff of the Ancker Hospital from 1903 to 1919, aged 68, was drowned, July 4.

Eugene Lindauer, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia 1898, associate in neurology at the University of Pennsylvania Graduate School of Medicine, on the staffs of the Graduate and Philadelphia General hospitals, aged 64, died, July 28, of coronary occlusion.

Jerome Milton Keys, Omaha, Eclectic Medical Institute, Cincinnati, 1882, at one time professor of principles and practice of medicine and dean of the faculty, Nebraska Medical College Lincoln, aged 85, died, July 9, in the Lutheran Hospital of hypostatic pneumonia and cerebral arteriosclerosis.

Louis Martin Kalajian, Cranston, R. I., Boston University School of Medicine, 1936, aged 28, intern at the Mercy Hospital, Wilkes-Barre, Pa., where he died August 21 of rheumatic heart disease, acute pulmonary edema and bilateral pneumonia.

Austin A. Swope, Crawfordsville, Ind., Medical College of Indiana Indianapolis 1898, member of the Indiana State Medical Association on the staff of the Culver Hospital, aged 68, died, July 17, of cerebral embolism and gastro-enteritis.

Clarence Alexander Hamill, Ligonier, Pa. Western Pennsylvania Medical College, Pittsburgh 1908. member of the school board, aged 55, died July 19 in the Latrobe (Pa.) Hospital, of acute myocarditis and perforated gastric ulcer.

Carl Albin Lofgren, Chicago. College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1902, aged 67, died, July 12, of diabetes mellitus.

Robert Wesley Lynn, Lethbridge, Alta., Canada. University of Toronto Faculty of Medicine 1909, aged 52, died, July 8, as the result of an automobile accident.

Joseph S. Thrailkill, Wood River, Ill. American Medical College, St. Louis 1883, aged 75, died June 30 of arteriosclerosis.

Correspondence

NATURE OF DOG BITES

To the Editor—In the interest of accuracy, a revision of Dr Morris's revision of Mr Terhune's statement (*THE JOURNAL*, September 5, p 809) seems necessary. Canines give a vigorous shake to a bite" is altogether too broad a generalization to apply to a genus purposely bred to such wide variations trained to immensely different modes of action. The quoted statement is true of the terrier breeds, which, seizing small animals such as rats and rabbits, give a shake to break the neck. In contrast, breeds such as the collie and wolfhound, equipped with long shearing jaws, give a swift slash and leap back instantly to escape the enemy's riposte. Then consider the retriever breeds, trained to seize their prey with the utmost gentleness. I have never known one of this breed, even under extreme provocation, to give a human being a bite that could be called more than a reproachful nip. And again there is the bulldog trained to close his jaws on a victim and keep them closed with the grim implacability of a steel clamp. The bites of lap-dogs, with their small mouths and sharp teeth, resemble cat bites.

Besides the wound variation due to such instinctive modes of attack, one has to consider further variations due to each individual animal's personality or temperament. This factor probably varies more widely in dogs than in any other animal except man. The only conclusion is Dog bites are as you find them, which will be in great variety, each indicating its own best mode of treatment.

JOHN G. HANNA, Dunedin, Fla

"SERUM TREATMENT OF ACUTE POLIOMYELITIS"

To the Editor—It has been generally overlooked that the advocacy of convalescent serum in therapy was probably based on a misconception. Because convalescent serum neutralized poliomyelitis virus in vitro, it was assumed that it would do so likewise in patients, without considering the time interval and the probable fixation of virus in the nervous tissue. In practically every region where poliomyelitis prevails, the disease was first recognized after paralysis had developed, and only later was it realized that diagnosis was possible during the preparalytic phase and that there was also a nonparalytic type. When serum treatment was instituted the results seemed almost uniformly favorable, since the ratio of the preparalytic to the nonparalytic could not be determined prior to treatment, nor could there be reliable knowledge of the incidence of unreported illness in the community that might have been due to unrecognized nonparalytic poliomyelitis.

Harmon's review, to which reference is made in the editorial on serum treatment of acute poliomyelitis (*THE JOURNAL*, August 8, p 432), can hardly be held as giving support to serum therapy except on clinical impression, and his final paragraph reads, in part, like an uncritical anticlimax to an exhaustive analysis. Jensen states in his report that it was the first time that serum was used in Denmark in preparalytic cases prior to 1933 only paralytic cases were reported. The recent review published by the Health Section of the League of Nations (R. E 180, No 10-12 [Oct-Dec.] 1935) in commenting on Jensen's report points out that the patients treated early with such apparent success must have included not only severe cases but also all the mild cases, which would in any event have escaped paralysis, whereas, the cases treated later, since the attack lasted longer, included the severe cases and, therefore, would naturally show a higher percentage of paralysis.

But aside from considerations of the literature, my own experience has led me to doubt the efficacy of serum. In 1924

I had an opportunity to observe personally in the Syracuse outbreak (*THE JOURNAL*, Aug 11, 1928, p 394, *Am J Dis Child* 41 829 [April] 1931) a series of forty-six preparalytic cases, thirty-two of which were treated with convalescent serum and fourteen with horse serum possessing no antiviral properties. In the first group, 84 per cent escaped paralysis, in the second, 64 per cent. Analyzed statistically, it can be shown that there is no significant difference between the results in these two groups. Yet Kellogg (*THE JOURNAL*, Dec 21, 1929, p 1927) and others in referring to this observation inferred that both serums were effective, without inquiring into the natural history of the disease in such cases. Harmon has since collected the statistics on 531 untreated patients with preparalytic poliomyelitis and found that 380, or 71.5 per cent, never had paralysis at any time, and he points out that the outcome in patients treated in the preparalytic stage does not differ from the average of untreated patients.

Following Park's study in 1931, my associates and I began venturing to treat early cases of poliomyelitis without serum. In the 1935 outbreak in Syracuse, there were thirty local cases and five cases imported from neighboring areas. Of the thirty-five cases, twelve were reported after paralysis had developed and twenty-three were reported early in the disease without any muscle weakness. I was able to observe these cases carefully and had all but six in my service in the City Hospital. Omitting three cases in which serum was administered and two treated by spinal drainage, eighteen are left that were treated expectantly. Slight muscle weakness developed in two of these and sixteen of the patients remained nonparalytic.

It may be that a final decision cannot be made at this time. A number of recent papers have emphasized the value of transfusion in poliomyelitis. I have given transfusion in severe progressing cases and have seen apparent sudden cessation of the advancing paralysis and definite clinical improvement, but I have been inclined to attribute the improvement to the general and nutritional effects of the transfusion rather than to specific antibodies that the blood might have contained.

The chief objection to recommendation of serum treatment is that it makes it almost impossible to carry out observations on the natural history of the disease during epidemics. When I asked some Swedish pediatricians in 1930 why they had not obtained control series, they replied that they had not dared to let children with early poliomyelitis go without serum so long as it was considered valuable in therapy. This attitude likewise tends to induce anguish in parents whose children do not receive this treatment.

Finally, I should like to submit that the term "preparalytic" is inaccurate, in the sense that it is ordinarily used, as applied to cases in which there is no muscle involvement when first recognized. It would be far more accurate to speak of them as incipient poliomyelitis cases, denoting that they might remain nonparalytic or terminate in muscle weakness or paralysis.

A CLEMENT SILVERMAN, M.D., Syracuse, N. Y.

DENTAL NOMENCLATURE

To the Editor—The first book to be reviewed in *THE JOURNAL* August 15, page 527, is *Dental Roentgenology*, by Dr LeRoy M. Ennis the second edition. It is well reviewed with the exception of the last sentence, which reads

As in the first edition the author clings to certain terms that are obsolete and should be changed. He uses the term premolar instead of bicuspid and refers to mandibular and maxillary molars instead of upper and lower molars.

Most of the few dentists who read *THE JOURNAL* will merely pass this by and remark inwardly that nothing can be done about it, with a smile, but, for the medical man who wishes to inform himself intelligently on anatomic matters let him not

be misled by the statement quoted. He will find in a certain little book, *Dental Anatomical Terminology*, by L. Pierce Anthony for the Committee on Nomenclature of the American Dental Association, and published by the committee in 1930, that premolar mandibular and maxillary are the terms of choice and not bicuspid, upper and lower. Some one other than Dr Ennis seems to be out of date.

LAWRENCE CURTIS, D D S, M D Philadelphia

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HYPERPYREXIA IN TABETIC FORM OF DEMENTIA PARALYTICA

To the Editor—In the treatment of the tabetic form of dementia paralytica when should hyperpyrexia be attempted and what is the best recognized method? Where can I find literature on this subject? Kindly omit name and address.

M D Pennsylvania

ANSWER—The earlier a case of the tabetic form of dementia paralytica is treated with hyperpyrexia the better are the chances for a recovery. Hyperpyrexia will in certain cases arrest the disease and produce a mental remission in the patient. This treatment cannot, of course, restore nerve tissues that have already been destroyed, though it may decrease the inflammatory infiltrations that are caused by the disease. It may also kill some or many of the spirochetes present in the tissues of the central nervous system if the fever is high enough and sustained long enough. To be effective in this sense, a bout of fever should be sustained for at least eight hours above 103.5 F and above 105.8 for two of these eight hours. Between ten and twenty or more bouts of fever should be given each patient.

There are many methods in use for producing artificial fever and opinions differ greatly as to what modality should be employed. The oldest methods are those which use malaria typhoid vaccine and injections of foreign proteins and chemicals. Since 1929 a number of physical agents have been recommended by various authors for the production of therapeutic fever in man. Among these are hot baths and external and internal heating devices. Hot baths are used only by a comparatively small group of physicians because they are reported to be inherently more dangerous than the other methods. External heat in the form of electric blankets, electric light cabinets, radiant heat cabinets and air conditioned cabinets has been recommended by certain groups of investigators. Other workers prefer the use of penetrating heat produced by diathermic currents, so called short radio waves and electromagnetic induction. It is quite impossible, therefore to state that any method is a recognized method for producing artificial fever. The entire subject is at present in a flux. Changes in the methods of treatment are being advocated constantly. The literature on this subject is scattered throughout the medical journals of the world and no comprehensive book has as yet been written on the subject. The best way to become acquainted with the writings of hundreds of men who are interested in the subject is to consult the *Cumulative Index Medicus*.

Hyperpyrexia is at present a hospital procedure and should not be attempted ambulant or in the office of a physician. The successful treatment of a patient with artificial fever depends more on the skill of the physician than on the use of any specific drug, disease or machine. It is much more important therefore that a physician be well schooled in his particular method for producing elevated temperatures than that a certain definite method of inducing fever should be chosen. Many of the machines now on the market are unjustly extolled by their manufacturers. Certain machines have been approved by the Council on Physical Therapy and will produce fever efficiently. Others leave much to be desired in their action and some are dangerous. It is therefore much more a question of the skill and experience of the physician who uses artificial fever therapy than a question of the modality he chooses to employ.

GLEET

To the Editor—A dentist married one year developed a urethritis three and one half months ago. There is no history of outside sexual contacts. No contraceptives are being used by either husband or wife. The urethritis was rather mild the discharge being grayish white and mucopurulent. This lasted about three weeks and subsided. Repeated examinations failed to show gonococci. Now after three and one half months the walls of the terminal part of the anterior urethra as well as the meatus are often glued together there is a slight amount of discharge (small drop) in the morning. The urine is not cloudy, grossly even in the first glass but always shows clumps or flakes of pus floating in the urine. The second glass is always entirely clear. Except for the anterior urethritis the examination of the genito-urinary system is negative. The patient is in the best of health, without evidence of tuberculosis anywhere, including the genital apparatus and the prostate feel normal. My diagnosis was nonspecific urethritis. My treatment consisted of occasional injection of mild protein silver 10 per cent occasionally potassium permanganate 1:5000 3 per cent resorcinol several times and on two occasions diluted hydrogen peroxide followed by mercuric oxycyanide 1:800. The chronic urethritis still persists. Kindly diagnose and outline treatment.

Louis N. Rubin M.D., Orr, Minn.

ANSWER—The patient's problem concerns itself with the determination of the cause of the morning drop and the glued meatus. This condition is sometimes called "gleet."

One of the common causes of gleet is the presence of infection in the prostate gland or seminal vesicles or both. Therefore a careful examination of the prostate should be made by rectal examination and the prostate and vesicle carefully massaged and the fluid examined for the presence of pus. If pus is found, the fluid should be stained with methylene blue and a Gram stain made to identify the organisms present. It probably will be advisable to make cultures of the fluid. If possible, a bouillon filtrate should be prepared and the patient inoculated with it. Heat by rectum, sitz baths and massage are in order should these organs be involved.

Careful exploitation of the urethra should be made with acorn bougies to ascertain the presence of granulations or strictures. Should they be found, sounds should be passed at weekly intervals and the urethra should be massaged on the sound. This should be followed by the injection of strong protein silver 0.5 per cent, or urethral irrigation may be used with potassium permanganate in the strength of 1:4,500.

In rare instances the discharge may be due to a small meatus. If this is the case a meatotomy should be done.

Finally, if all these are negative, examination of the urethra with the endoscope is advisable in order to see whether infection in the glands of Littre or in the Lacunae of Morgagni is present. This should be treated by fulguration with the high frequency spark through the endoscope.

TOXICITY OF OSMALITE TERMITE REPELLANT

To the Editor—There is a preparation named Osmalite used in the preservation of wood. I understand that its composition is dinitrophenol, sodium fluoride, potassium bichromate and gum arabic. This preparation penetrates into rubber gloves and the skin of the hands is stained a deep yellow. It is applied as a paste with a brush to poles and a week ago one of the workers came in with a folliculitis which I felt might be traced to this compound. Have you any record of industrial poisoning due to this specific compound used in the manner described?

M D., Michigan.

ANSWER—Osmalite is a fairly new wood preservative so that full knowledge of its toxic properties is not available. Its chief use is said to be as a repellent for termites. It is believed to contain the following constituents in approximately the proportions shown: dinitrophenol 14 per cent, sodium fluoride 78 per cent, potassium bichromate 3 per cent, gum arabic (acacia) 5 per cent. This substance is mixed into a paste, approximately one pound of water being used for two pounds of the powder. This paste is destructive for protective gloves so that contact with the skin is a reasonable expectancy. In addition to local action, systemic involvement conceivably may arise from skin absorption (chiefly of the dinitrophenol which readily passes through the skin), and possibly through carrying particles of the chemical mixture from the hands to the mouth in eating or smoking.

Each of the ingredients thought to be present has been the source of skin disease. In addition the dinitrophenol in small quantities is regarded as highly toxic in that well defined systemic disorders may be produced. These have been well described in THE JOURNAL during recent months in connection with the use of dinitrophenol in weight reduction. The action of this substance as a skin irritant is quite like that of trinitrophenol (picric acid). Sodium fluoride may be accepted as relatively unimportant as a skin irritant but cases have been described. This substance is currently attracting attention as a source of damage to the teeth. Even in the low percentage

present, potassium bichromate may be injurious to the skin particularly if the integument should be broken. Dermatoses from gum arabic are probably allergic in nature.

A folliculitis from osmalite is not denied as a possibility but it is felt that a direct contact chemical dermatitis is more likely. No known published records have reported a dermatitis from this wood preservative, but casual inquiry of users indicates the occurrence of skin disturbances.

In the absence of extensive toxicologic data it becomes necessary to regard this chemical mixture (because of extensive information about its constituents) as dangerous if in fact it is brought directly in contact with the worker's body.

INSOMNIA IN DIABETES

To the Editor—An intelligent white man aged 29 has had diabetes for the past five years. He complains that for the past three months he has not been able to sleep except for intervals of from fifteen to thirty minutes. He says that he is tired but is never sleepy. I have given him practically all the recognized hypnotics from bromides in massive doses, to pentobarbital sodium but they do not seem to be effective in producing sleep. At the present time his diabetes is being treated with 60 units of insulin and a diet containing 125 Gm of carbohydrate. His blood sugar level seems to be lowered under this treatment being 200 mg at the present date. His urine is acetone and sugar free. He maintains his weight at between 140 and 146 pounds (63.5-66 kg.). His blood pressure is 130 systolic 80 diastolic. His pulse rate varies from 100 to 120 and the respiration rate is 18. During the past two months he has had a rapid pulse of from 100 to 120 per minute even at rest. At times he gets attacks of palpitation of the heart which do not last very long. His past medical history is practically negative. There are no complaints referable to the genito-urinary or gastro-intestinal tracts or other symptoms except as stated. At times he breaks out with an urticaria which he thinks may be due to the insulin since it often occurs after he injects the insulin prescribed. What is the apparent cause for his sleeplessness and how can it be treated? Can insulin in large doses be responsible in any way? Can insulin cause an urticarial reaction? Please omit name.

M D Pennsylvania

ANSWER—Diabetic patients seldom have insomnia. Of course there is the possibility that the patient may develop a low blood sugar during the night even though the blood sugar reported is 200 mg. This should be followed up more closely. Insulin does not cause insomnia without accompanying symptoms, such as those resulting from hypoglycemia. Therefore in this patient one must look for other reasons. By chance is there hyperthyroidism? Does the patient take other drugs? Is the Wassermann reaction negative? A lumbar puncture might be desirable and a nervous cause should be sought. Is the patient neurotic? Does he earn his own living?

As for urticaria, it is true that allergic reactions do develop in patients after administration of insulin, but as a rule these disappear within a few weeks of the beginning of treatment. When they once disappear, they seldom recur.

REMOVAL OF PIGMENT FROM SKIN

To the Editor—In the March issue of *Hypgia* there is an article entitled *The Blue Man* written by Arthur W. Stillians. He states that it is possible to remove silver deposits from the skin. The son of a prominent man in this city has a permanent "black eye." This dates to three years ago when the doctor who was in this office before me attempted to force silver nitrate through the tear duct causing the silver nitrate to go into the tissues and turn black. This has caused a permanent pigmentation of the skin about which the family is very anxious. Therefore I am writing to you to find out the technique of the method described in the aforementioned article. Just which photographic reducing fluid is used? What strength is to be used? How is it sterilized? Any other pointers in the technique, such as depth of injection and advisability of periods between injections will be appreciated. I should like to be able to help this child.

M D New Hampshire

ANSWER—The reducing fluid used for removal of silver from the skin is one composed of a solution of potassium ferricyanide and sodium thiosulfate in water. One per cent of the ferricyanide and 6 per cent sodium thiosulfate were found to be as efficacious as any other percentage though other strengths will do the work. A 2 per cent solution of potassium ferricyanide is prepared (10 cc is a convenient quantity) and a 12 per cent solution of sodium thiosulfate. Equal quantities of these two are drawn into the syringe just before injecting. If mixed and allowed to stand the solution oxidizes and becomes inert. As soon as the mixture is made, it is injected intradermally through a fine platinum needle causing a wheal. When this subsides after several days a white spot will be seen where the silver has been removed.

The injection causes a sharp stinging sensation. Local anesthesia may be used if epinephrine is omitted for it delays

drainage of the silver solution into the lymphatic vessels and the silver is redeposited. Nerve blocking can be accomplished by injecting the anesthetic into the infra-orbital foramen, though additional subcutaneous injections will be needed about the internal canthus. Unfortunately the skin of the lower lid, which is most often stained by silver, is the hardest part of the skin to treat because it is so thin. Great care must be exercised to place the fluid as superficially as possible. The needle should be very fine, and a locking syringe is of great advantage when many injections are to be made. If the solution is made in sterile distilled water in sterile glassware and handled with surgical precautions, the fluid needs no sterilization. Potassium ferricyanide is antiseptic, and attempts to sterilize will destroy the value of the solution.

There is no danger of poisoning from the use of potassium ferricyanide. So little can be introduced even by the fastest worker, and it is destroyed so rapidly by oxidation, that any harm to a human being from this source is unlikely.

It is advisable to allow the reaction in one area to subside somewhat before treating a contiguous area, though no harm to the skin has resulted from many thousands of such injections.

BILATERAL CAROTID ANEURYSM

To the Editor—Is there any treatment for bilateral carotid aneurysm? One side is 1½ by 1 inch the other side 1 by three-fourths inch. They do not seem to have pedicles. If there is a treatment please give prognosis. Kindly omit name and address.

M D Wyoming

ANSWER—Treatment for bilateral aneurysm should be limited in adults preferably to open operation with obliteration of the sac and reconstruction of the lumen of the common carotid artery, or end to end suture if feasible. In young persons and occasionally in adults it may be found desirable or necessary under certain conditions to ligate the common carotid artery above and below the aneurysm. In a large percentage of adults this will lead to cerebral anemia and perhaps hemiplegia and symptoms of mental degeneration.

Before operation an effort should be made to develop collateral circulation by digital compression of the artery proximal to the aneurysm, and only one side should be operated on at a time. The metallic band as used by Halsted, Matas and Allen for either complete or partial occlusion of the artery has many advantages over ligatures. The lumen of the artery may be occluded in one or more stages as collateral circulation develops. It may be removed after partial or complete occlusion if cerebral symptoms develop.

Local anesthesia should be used because of the danger of cerebral anemia.

The prognosis without operation is poor, although cases of spontaneous thrombosis and cure of a common carotid aneurysm have been reported. There is considerable danger of a propagating thrombosis after ligation and but little after use of the metallic band.

In old or bad risk patients, no treatment other than rest and avoidance of effort should be attempted.

IRRITATION OF EYES FROM LACQUER SPRAY

To the Editor—I am practicing in a town where a radio cabinet factory is located and have had some patients consult me on the chronic irritation of the eyes due to the lacquer spray used in cabinet manufacture. I have consulted the literature on the subject and have not been able to find a definite treatment. I have used many of the common eye lotions to no avail and shall be grateful if you will kindly advise me on the subject.

M D Indiana

ANSWER—The coating materials customarily applied to radio cabinets are not dissimilar to those widely used in other industries including furniture and piano manufacture. The many possible lacquer solvents and thinners include toluene, xylene, benzene, petroleum fractions, divers alcohols and acetates. All are potential eye irritants. The direct entry of any of the fluids into the eye, such as from splashing, will inevitably lead to an acute conjunctivitis. More often the eye disorders are due solely to day by day exposure to vapors and mists created in the normal course of spray coating. This form of conjunctivitis is not severe but commonly will persist as long as exposure is continued, regardless of treatment. There is no specific treatment, and relief is to be sought in preventive measures. Properly designed spray booths protect the workman against this form of injury. Goggles are available with soft rubber edges which by fitting closely against the skin about the eyes, avoid the entry of irritants. Various types of hoods likewise offer some degree of protection.

In the absence of secondary infection, this form of conjunctivitis may be expected to disappear without or with treatment soon after exposure is eliminated. In many Indiana manufacturing cities large numbers of Kentucky mountaineers are employed. In this class of workers trachoma has been encountered and this constitutes somewhat of an industrial hazard in that state. Until ruled out, trachoma should be suspected in the present situation. Remotely the possibility exists that methanol (wood alcohol) may be used in radio cabinet coatings. This substance, if present obviously provides a greater threat to the eyes of exposed workmen than any usual constituent of paints, lacquers, enamels or their thinners.

CAUSES OF DEATH

To the Editor—A man aged 48 employed by a local distributing company was involved in an automobile accident February 29 near an adjoining city. As a result of this accident he suffered what were considered several minor contusions about the body. He was taken to the office of a physician in that town where he was treated for his injuries. This physician states that the deceased was acutely intoxicated when he first examined him and that he treated his injuries and that he left his office apparently all right so far as the injury was concerned. He was taken in custody by the highway police and taken to police headquarters in the same city and soon after his arrival there suffered an apparent collapse and died in a comparatively short time. The body was brought here and I participated in an autopsy to ascertain whether or not he died of injuries or from natural causes. The brain was normal except for a slight gumma in the right parietal lobe. There was no hemorrhage of the brain or the meninges and no fracture of the skull. Contusions were present over the right eye over the bridge of the nose and on the left arm. There were contused abrasions over the tip of the left shoulder and over the anterior surface of the tibia about midway of both legs. The heart and lungs were normal. No enlargement of the heart valves was apparent. There was full compensation. The lungs were normal. No trouble existed with the aorta or large vessels. The abdomen was normal except for slight enlargement with an apparently fatty degeneration and some granular degeneration. There was fatty degeneration of the penis on which there was a scar from probable chancere on the dorsal surface. These conditions however were not sufficient causes for sudden death. In the stomach was a foreign body tightly embedded within the pyloric orifice at the outlet. Incision into the organ proved this to be a cork stopper from a vial or bottle. The cork measured 12 by 10 by 13 mm. No other solid contents remained in stomach. The man's family physician and the doctor who attended him for the injuries were both present at the autopsy. The family physician stated that the deceased had shown sugar in the urine for a considerable time. The doctor who attended his injuries verified the deceased's condition as acute alcoholic intoxication at the time of his injury. The question confronting us at present is whether this cork tightly embedded in the pyloric outlet could have been the cause of death especially in the presence of a stomach full of liquid as was apparently the case at the time of death and the existing diabetic condition. M D Centralia Ill

ANSWER—There is no reason to assign any importance in causing death to the small cork found at the outlet of the pyloric orifice.

The record submitted does not warrant any conclusion with respect to the exact cause of death. The description of the abdomen is not clear—'normal except for slight enlargement of what? with atypical fatty degeneration and some granular degeneration.' Question may also be raised with regard to the statement that the brain 'normal, except for a slight gumma in the right parietal lobe. This is an unusual place for a gumma and one wonders whether the diagnosis of gumma is correct. The coronary arteries do not seem to have been examined which is unfortunate especially in view of the fact that the patient may have had syphilis. As matters stand acute alcoholic intoxication shock due to the injuries received and diabetic coma cannot be excluded as possible factors in the causation of death.

INCIDENCE OF EMBOLISM AFTER OPERATION

To the Editor—I have an inquiry at hand relative to the percentage incidence of emboli secondary to gallbladder operations with removal or only drainage and also as to the percentage incidence of emboli secondary to operations for acute appendicitis. If there are any further data as to the frequency of emboli necessitating amputation of a leg secondary to an alleged sprain of the ankle joint it would be of decided value to me. Kindly omit name. M D Illinois

ANSWER—A paper by Earl F. Henderson (*Arch Surg* 15 231 [Aug] 1927) entitled "Fatal Pulmonary Embolism" contains one of the largest collections of statistics on the subject. Briefly in one of the groups of cases which he studied there were 63,345 intra abdominal operations; these operations were performed at the Mayo Clinic between 1917 and 1926. In this series of cases in 11,689 operations on the gallbladder and ducts the incidence of fatal postoperative pulmonary embolism was 0.30 per cent whereas following 12,356 operations on the

appendix the incidence of fatal pulmonary embolism was 0.02 per cent. Emboli following cholecystostomy were not separated from those following cholecystectomy. According to K. K. Nygaard, among 165,000 cases in which operation was performed at the Mayo Clinic there were approximately 1,700 instances of postoperative thrombosis and embolism, either nonfatal or fatal.

REPEATED ABORTIONS AND STERILITY

To the Editor—A woman aged 28 married nine years desires to have a child. She had an induced abortion done in 1927 after a three and one half months pregnancy another induced abortion in February 1931 after a ten weeks pregnancy and another induced abortion in November 1931 after a five and one half months pregnancy. In June 1934 she had a spontaneous abortion after ten weeks. No contraceptives have been used by either her or her husband since the last pregnancy. Her menstrual period occurs every twenty four to twenty-eight days and lasts about four days. Some months she has more dysmenorrhea than others. She has had midmenstrual pains in the lower right quadrant almost every month since her appendectomy in 1925. Tonsillectomy was performed in 1928. The cervix was cauterized in 1935 and at present appears in good condition. The vaginal secretion and the cervical secretion react neutral to litmus. No masses can be felt in the adnexa. The uterus and cervix appear in good position. There is no history of venereal diseases. The Wassermann reaction is negative. The urine is normal. The blood pressure is rather low being 108 systolic, 60 diastolic. A month and a half ago she had a dilation and a curettement done by another physician who told her that it would help her. She is disappointed as she expected to become pregnant soon after. The woman appears normal and in good health to the best of my knowledge. Can you tell me why she is unable to become pregnant again after being very fertile during the years 1927 to 1934 inclusive? Will you suggest a line of treatment that I may follow? Would a tubal insufflation be indicated? What about endocrines in this case? Would a trial at artificial insemination be of any benefit? Kindly omit name. M D New Jersey

ANSWER—The repeated abortions which this woman has had may be the cause of her sterility. There is no mention of the type of recovery made from the last abortion. Not infrequently even when there are no outward signs of infection following an abortion there may be a mild salpingitis or perisalpingitis sufficient to produce closure of the tubes. Before anything further is done it is advisable to examine the husband's semen to make certain that he is not the cause of the sterility. If the spermatozoa are normal, a tubal insufflation should be performed. It was unwise to perform a curettement without first being certain that the tubes were patent.

There is no indication for the use of endocrines in this case. If the tubal patency test reveals normal tubes nothing further should be done for at least a few months and the patient should be encouraged with the information that she and her husband are normal and that a pregnancy may therefore occur without special treatment. The patient is unreasonable to expect fertilization to follow within a month and a half after a dilation and curettement even if the tubes are open. These operations are by no means always followed by pregnancy and it is unfortunate that the physician who performed the curettement promised the patient too much. There is no need to resort to insemination of sperm at the present time even if the tubes are found to be patent. This procedure is a last resort and of course, is to be employed only if the sperm are normal and the tubes are patent.

EPILEPTIC SEIZURE IN MOTION PICTURE OPERATORS

To the Editor—A man who has been operating a moving picture machine for a number of years was brought to the hospital having an epileptic seizure and a clonic spasm in one of his arms. There is no previous history of any illnesses over a period of many years. He does not drink his general health is good and he has never had such a seizure before. The spinal Wassermann reaction is negative. I am of the opinion that some poison coming from the operation of the machine in a poorly ventilated room might be responsible for the condition. I will very much appreciate any help you can give. M D, Texa

ANSWER—A direct relationship between the work of a motion picture operator and the condition described in the query is improbable or at best may be established with difficulty. Some remote factors may be mentioned as possibly related. In some electric arcs such as may be used for motion picture projection traces of carbon monoxide may arise. Epileptoid seizures have been reported as a manifestation of carbon monoxide poisoning. In this event some more characteristic features of carbon monoxide asphyxiation should clearly be detectable. The high temperatures at times present in booths place a burden on the normal functioning of the body but epileptic seizures cannot be regarded as an anticipatable result. In years past certain types of carbons used in arc lamps have been jacketed with metal to decrease the rate of burning. Metal vapors thus produced may cause "metal fume fever." In case

claim before a compensation board, lead poisoning from this source was asserted. It is the intent of this discussion to indicate that while the work of the motion picture operator may be associated with various undesirable work conditions, none are known causes of epilepsy.

TREATMENT OF SYPHILIS COMPLICATED BY FUNCTIONAL PRURITUS

To the Editor—A man aged 26 contracted syphilis in April 1934. At that time he came under the care of another physician who gave him a course of ten injections of nearsphenamine and ten injections of a bismuth compound intramuscularly. Following this two Wassermann reactions at monthly intervals were negative. In August 1934 while the patient was receiving treatment, he noticed a severe form of biting or burning subcutaneously distributed over the entire body. This burning or biting was of but a few seconds' duration only to recur in from half an hour to three or four hours later. He presented himself to me in December 1934 from which time on he received approximately forty injections of nearsphenamine and forty injections of a bismuth compound intramuscularly. Up to the present time his sensation of biting and burning has been uninterrupted. Also at various times he has noticed tachycardia on retiring. A neurologic consultation revealed no pathologic changes due to syphilis. The consultant did make a presumptive diagnosis of either hypothyroidism or hyperthyroidism. A basal metabolic test revealed a minus 10. The iodides were given in dosages of seven drops three times a day without any amelioration of symptoms. Thyroid was given in dosages of one-tenth grain (0.006 Gm.) four times a day with cessation of the tachycardia. Various drugs have been attempted with no relief. Urinalysis is negative, the blood pressure and temperature are normal and physical examination is essentially negative. Anything you may be able to advise as to the future course of treatment for this patient will be appreciated. Please omit name.

M D Pennsylvania

ANSWER—In a man 26 years of age with burning and biting of the skin and no obvious cutaneous lesions, it would seem most likely that the complaint is of neurogenic origin. If the patient were 65 or older, the possibility of acarophobia would enter into consideration. The fact that he has received forty injections of nearsphenamine and forty injections of a bismuth compound without the development of cutaneous complications of any sort would indicate that the burning and biting were not the result of the original course of nearsphenamine and bismuth he received at the time the syphilis was recognized. The persistence of the symptoms during the rest interval from treatment strengthens this impression. The likelihood of an urticaria should be considered but apparently can be dismissed in view of the absence of any skin lesions. The same applies to infestation with scabies or other mites.

The development of a functional pruritus in this young man who recently acquired syphilis seems a plausible explanation for his complaint from the data given in the inquiry. If the blood and spinal fluid tests are now negative, two courses of a bismuth compound a year, fifteen injections each for the next two years, would seem warranted. In addition, the repeated reassurance that his infection is controlled and the administration of a sedative should dissipate his complaint.

RESIDUAL PARALYSIS AND ANESTHESIA OF FOOT

To the Editor—I have a patient aged 10 with a residual paralysis and anesthesia of the right foot. About five years ago when the child was attempting to learn to swim the large toe was cut. This wound did not heal and x-ray examination revealed a slight involvement of the periosteum. In October 1935 the wound healed but since then a large amount of callous formation has formed over the site of the old wound on the inside of the toe. An orthopedist prescribed shoes which do not relieve the condition. In walking the foot is everted and the toe greatly so that the site of the old wound is the part at the bottom. Many methods have been tried to keep the toe in position without any success. There is slight sensation and motion present now for the first time. Is there any way of keeping the toe in position?

C R CHADBURN M D Janesville Minn

ANSWER—Treatment in this case would depend to some extent on the etiology of the paralysis. Infantile paralysis rarely if ever produces anesthesia. Paralysis secondary to spina bifida may be of a mixed type with paralysis of some muscles and spasticity of others and quite commonly is associated with anesthesia. Lacerations, like trophic ulcers, in regions that are totally anesthetic, are characteristically slow in healing. Recurrent callous formation in the scar results from chronic trauma and can be relieved only by protection against the repeated injury. Reconstruction operations are contraindicated if the anesthesia persists, but partial return of sensation and muscle function would suggest that surgical stabilization of the foot be considered. This would tend to correct the eversion of the foot and the dragging of the toe in walking. Amputation of the toe in cases such as that described is justified if other measures fail to bring about healing.

ADMINISTRATION OF ANTITOXIN TO SENSITIVE PATIENT

To the Editor—I have a patient to whom it has been necessary to give a prophylactic dose of antitetanus serum on two occasions within the past year. The first dose was accompanied by some degree of urticaria but no untoward symptoms. The second dose given about three weeks ago produced fever (103 F) headache and violent pains in the knees and muscles of the calves. It was necessary to give morphine on several occasions to quiet the patient. My reason in writing is to ask your advice as to the advisability of using antitetanus serum following subsequent accidents if such occur. Undoubtedly this boy who is 8 years old will need prophylaxis again and it would be with some temerity that I would administer the serum. Can you suggest a procedure that would obviate the likelihood of the foregoing or similar reactions? Please omit name.

M D Ohio

ANSWER—Should it seem advisable to administer antitetanic serum to the patient on some future occasion, one of the following plans may be adopted:

1 Use cow tetanus antitoxin instead of horse tetanus antitoxin, provided the latter was given on previous occasions (There is a cow tetanus antitoxin on the market).

2 Prior to serum injection, make a skin sensitivity test and, if positive, attempt to desensitize the patient. For the test, inject the serum intracutaneously in a dilution of at least 1 to 10. Do not attempt to make the tests with undiluted serum.

3 Before injecting tetanus antitoxin, add to it from 0.3 to 0.6 cc of epinephrine of a 1:1,000 solution.

PSYCHOTIC IMPOTENCE

To the Editor—I have a patient 45 years of age, apparently in good health whose only complaint is inability to have sexual intercourse. He is a man who has never had sexual contact with any woman but his wife who died about one year ago. His impotence dates from that time. Previous to this he had intercourse every night. He has sexual desire and appetite but is unable to obtain an erection with any woman although he has made several attempts with more than one woman. Often when he awakes in the morning and occasionally at other times he has a strong erection. He states that he is in love with one of these women and would marry again if he could have sexual satisfaction. I can find nothing wrong on physical examination. He has a normal prostate. Please omit name.

M D Michigan

ANSWER—The cause of this man's impotence is obviously psychic and requires a thorough, lengthy psychiatric study. It will be necessary to know a great deal about the man and his relations with his late wife and numerous other facts which are not mentioned in the question.

INJECTION METHOD FOR VARICOSE VEINS

To the Editor—A few patients have come to me with varicose veins and informed me that they have received injection treatments (of what they knew not) and to no avail and wish to know if any other form of therapy is available. When I mention surgery stripping the veins with excision they look askance and dubious. What in your opinion is the most serviceable agent to inject with the least reaction causing the percentage of sclerosis generally speaking? I realize that certain solutions are more adaptable to certain types of veins. As a last resort what agent would you say would give the highest percentage of sclerosis? What are its undesirable features? What are the reactions to it? What is the technique of its preparation and administration (if these are not obvious)? Thank you for any helpful suggestions in treating recalcitrant nonsclerosing veins.

DEE EDWARD FRANK M D New York

ANSWER—The questions asked by the correspondent embrace the entire subject of the diagnosis and treatment of varicose veins. These questions and some others have been answered in a small pamphlet issued by the committee on varicose veins of the American Medical Association and printed in 1931 in connection with the Detroit session. Such pamphlets are available through the American Medical Association.

Generally speaking, no one can successfully undertake the treatment of varicose veins without having visited a well organized varicose vein clinic of a university or general hospital and received first-hand information from men who are handling a large number of cases. This is the best way to avoid pitfalls and discouraging results.

DRUGS FOR RELIEF OF PAIN

To the Editor—Is there any drug or combination of drugs that may be given hypodermically which will relieve pain (severe) and which is not an opiate derivative? Please omit name and address.

M D California

ANSWER—The problem of a satisfactory hypodermic analgesic to serve as a succedaneum for an opiate in the treatment of severe pain has not been solved as yet.

Medical Examinations and Licensure

COMING EXAMINATIONS

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ALABAMA Montgomery June 29 July 1 Sec Dr J N Baker 519 Dexter Ave Montgomery

ARKANSAS *Basic Science* Little Rock, Nov 2 Sec., Mr Louis E Gebauer 701 Main St Little Rock *Medical (Regular)* Little Rock Nov 10 Sec Dr A S Buchanan Prescott *Medical (Eclectic)* Little Rock Nov 10 Sec Dr Clarence H Young 207½ Main St Little Rock.

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DELAWARE Dover July 13 15 Sec. Medical Council of Delaware Dr Joseph S McDaniel Dover

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FLORIDA Jacksonville Nov 16-17 Sec Dr William M Rowlett P O Box 786 Tampa

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KENTUCKY Louisville Dec 2 4 Sec State Board of Health Dr A T McCormack, 532 W Main St Louisville

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MAINE Portland Nov 3 4 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland

MARYLAND *Regular* Baltimore Dec. 8 Sec Dr John T O Mara 1215 Cathedral St Baltimore. *Homeopathic* Baltimore Dec 8 9 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston, Nov 17 19 Sec Board of Registration in Medicine, Dr Stephen Rushmore 413 F State House Boston

MICHIGAN Lansing Oct 14 16 Sec. Board of Registration in Medicine Dr J Earl McIntyre 202 3 4 Hollister Bldg Lansing

MINNESOTA Minneapolis Oct 20 22 Sec Dr Julian F DuBois 350 St Peter St St Paul

MISSOURI Kansas City Oct. 21 23 State Health Commissioner Dr E T McGaugh State Capitol Bldg Jefferson City

NEVADA Carson City Nov 2-4 Sec Dr John E Worden Carson City

NEW JERSEY Trenton Oct 20-21 Sec. Dr James J McGuire 28 W State St Trenton

NEW MEXICO Santa Fe Oct. 12 13 Sec. Dr Le Grand Ward Santa Fe.

NORTH CAROLINA *Endorsement* Raleigh Nov 30 Sec Dr Ben J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan. 5 8 Sec Dr G M Williamson 4½ S 3rd St Grand Forks

OKLAHOMA Oklahoma City Dec. 9 Sec Dr James D Osborn Jr Frederick.

OREGON *Basic Science* Portland Nov 21 Sec Mr Charles D Byrne, University of Oregon Eugene. *Medical* Portland Jan. 5 7 Sec Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia January Sec Board of Medical Education and Licensure Mr James A Newpher Education Bldg Harrisburg

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SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licensure Dr Park B Jenkins Pierre

TEXAS Waco Nov 10 12 Sec Dr T J Crowe 918 19 20 Mercantile Bldg Dallas

VERMONT Burlington Feb 10 12 Sec Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond, Dec 9 13 Sec Dr J W Preston 28½ Franklin Road Roanoke.

WEST VIRGINIA Wheeling Oct 12 14 State Health Commissioner Dr Arthur E. McClue Charleston

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AMERICAN BOARD OF INTERNAL MEDICINE *It written examination will be held simultaneously in different centers of the United States and in Canada in December. Practical or clinical examination will be given in St Louis in April.* Chairman Dr Walter L Biering 406 Sixth Ave Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7 Sec Dr Paul Titu 1015 Highland Bldg Pittsburgh (6)

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AMERICAN BOARD OF UROLOGY Chicago Dec 4 6 Sec Dr Gilbert J Thomas 1029 Nicollet Ave Minneapolis

Maryland June Examination

Dr John T O'Mara, secretary, Board of Medical Examiners reports the written examination held in Baltimore, June 16-19 1936 The examination covered 9 subjects and included 90 questions An average of 75 per cent was required to pass. One hundred and fifty-six candidates were examined, 133 of whom passed and 18 failed The following schools were represented

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine (1935) 82 5 (1936) 82 6 83 6		(1934)	82.2
Howard University College of Medicine (1935) 76 6 79 6 (1936) 75 1		(1935)	75
Loyola University School of Medicine (1936) 79 2		(1936)	80.7
Johns Hopkins University School of Medicine (1934) 81 2 (1935) 81 2 (1936) 77 1 79 5 80 4 80 6 81 81 81 5 81 7 81 7 82 82 83 83 1 83 4 83 4 83 5 84 1 84 2 84 5 84 5 85 1 85 3 85 6 85 7 86 86 86 1 86 4 87 1 87 4 87 5 87 5 88 88 89 89 4 89 7 90 7		(1930)	84.6
University of Maryland School of Medicine and College of Physicians and Surgeons (1933) 84 5 (1935) 80 2 86 (1936) 77 4 78 78 78 5 78 6 79 4 79 5 80 1 80 3 80 4 80 5 80 6 81 5 81 7 82, 82 82 3 82 7 82 7 83 83 1 83 2 83 2 83 5 84 84 1 84 6 85 1 85 3 85 3 85 4 85 4 85 6 86 86 2 86 4 86 5 87 1 87 2 87 2 87 4 87 5 87 5 87 6 87 6 87 7 88 88 2 88 7 88 7 89 89 89 2 89 5 90 90 3 91 3 91 4		(1933)	81.7
Harvard University Medical School (1933) 86 1		(1933)	86.1
University of Buffalo School of Medicine (1936) 80 3		(1936)	80.3
Jefferson Medical College of Philadelphia (1934) 84 3		(1935)	84.3
Univ of Pennsylvania School of Medicine (1934) 82 6		(1935)	82.6
University of Virginia Department of Medicine (1935) 81 3		(1935)	81.3
Marquette University School of Medicine (1931) 75 3		(1931)	75.3
Queen's University Faculty of Medicine (1932) 75 4		(1932)	75.4
University of Toronto Faculty of Medicine (1927) 78 1		(1927)	78.1
Fellow of the Royal College of Physicians of London (1935) 77 1		(1935)	77.1
Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1932) 78 3 *		(1934)	78.3 *
Georg August Universität Medizinische Fakultät Göttingen (1934) 87 5		(1934)	87.5
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt am Main (1933) 77 6		(1933)	77.6
Ludwig Maximilians Universität Medizinische Fakultät München (1935) 85 3		(1935)	85.3
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1935) 75 * 76 6		(1935)	81.1
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1932) 83 7 (1934) 81 2 (1935) 76 2 79		(1935)	81.1
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1928) 78 3 * (1934) 80 4		(1934)	80.4
School	FAILED	Year Grad.	Number Failed
Georgetown University School of Medicine (1934 2) (1935) 3		(1935)	3
Howard University College of Medicine (1931) 1		(1931)	1
University of Maryland School of Medicine and College of Physicians and Surgeons (1935) 1		(1935)	1
University of Nebraska College of Medicine (1936) 1		(1936)	1
Karl Franzens-Universität Medizinische Fakultät Graz (1928) *		(1928) *	1
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt am Main (1934) 1		(1934)	1
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1934) * (1935) 2 *		(1935) 2 *	3
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1935) 1		(1935)	1
Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia (1928) 1		(1928)	1
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1933) (1935 2) 3		(1933) (1935 2)	3
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1923) (1932) 2		(1923) (1932)	2

Thirteen physicians were licensed by reciprocity and 6 physicians were licensed by endorsement from April 6 through July 28 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine (1934) Pennsylvania		(1930)	Main
University of Illinois College of Medicine (1931) Indiana		(1931)	Illinois
Indiana University School of Medicine (1927) Dist Columbia		(1927)	Dist Columbia
Johns Hopkins University School of Medicine (1933) North Carolina		(1933)	North Carolina
University of Maryland School of Medicine and College of Physicians and Surgeons (1922) N Carolina		(1922)	N Carolina
Boston University School of Medicine (1934) Tennessee		(1934)	Tennessee
Vanderbilt Univ School of Medicine (1933) Kentucky		(1933)	Kentucky
Medical College of Virginia (1933) Virginia		(1933)	Virginia
University of Virginia Department of Medicine		(1933)	Virginia
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement with
College of Medical Evangelists (1932) N M Mex		(1932)	N M Mex
Yale University School of Medicine (1934) N M Mex		(1934)	N M Mex
Northwestern University Medical School (1934) N M Mex		(1934)	N M Mex
Johns Hopkins University School of Medicine (1934) N M Mex		(1934)	N M Mex
University of Rochester School of Medicine (1934) N M Mex		(1934)	N M Mex
Duke University School of Medicine		(1934)	N M Mex

Verification of graduation in process License has not been issued

Book Notices

Interpretation of Laboratory Findings. By Raymond H Goodale M.D. Pathologist City Hospital Worcester Mass. Cloth Price, \$2.25 Pp 170 Philadelphia F A Davis Company 1936

This is a concise collection of facts regarding the usual routine laboratory tests and their interpretation. The first part is devoted to a brief discussion of the normal values and the interpretation of abnormal values of the various body fluids and excretions. The second part is an alphabetical listing of diseases that show abnormal laboratory examinations. The third part is a short synopsis of the pathologic physiology of the body fluids and excreta, and the concluding part takes up methods of collecting and preparing body fluids and tissues for the laboratory. Such an organization is well adapted to the needs of the busy practitioner of medicine but it is doubtful whether the unusually brief treatment of the various subjects will satisfy his needs. It would also appear logical to have the third part, which deals with the pathologic physiology of body fluids and excreta, occupy the introductory chapter. In interpreting laboratory results one must transform laboratory data into a clear concept of the physiologic biochemical and pathologic changes that could explain them. This section, aside from its position in the text is not comprehensive enough to give the physician the necessary fundamental understanding of the laboratory test. The judicious use of diagrams or illustrations would have aided the text considerably. In a book as concise as this, a well selected bibliography would have been advantageous to the reader who desired to go beyond the information given in the text. The data included in the book are for the most part well selected and current. The volume is intended primarily for the physician who desires a concise statement on the interpretation of laboratory work.

Röntgenkymographische Bewegungslehre innerer Organe. Von Dr med habil Pfeilkart Stumpf Dozent für Röntgenologie an der Universität München Dr med H H Weber Röntgenfacharzt in Bern und Dr med habil G A Weltz Röntgenfacharzt in München Mit Beiträgen von Dr med W Böhme et al Paper Price 42 marks Pp 516 with 447 Illustrations Leipzig Georg Thieme 1936

This book represents a remarkable series of studies made with a technic which is just coming into common use. As usual with such matters, the idea was put forth early in the history of roentgenology but was not used until recently when apparatus was worked out and perfected. The original idea was to put a metal grid with a series of narrow slits between the patient and the film, and then during the exposure to move either the film or the grid. If, then, as in the case of the heart, there is movement of the walls of the organ such movement will show up as saw-tooth indentations in the shadow on the film. In this way it is possible to analyze minutely the movements of the various parts of an organ. Furthermore, by passing a fine beam of light through the part of the film containing the saw-tooth indentations and on to a photo-electric cell, and then recording the variations in the current with the help of a galvanometer and a mirror which writes on a moving sheet of light-sensitive paper, a curve can be obtained which closely resembles that obtained with a heart lever or with one of Wiggers pressure recording capsules. By putting the films also into a suitable apparatus and moving them in relation to the grid the student can obtain a visual impression of the original motion of the organ studied. The book shows pictures of several pieces of apparatus which have been developed for the making of the films and for their analysis. The grid or the film may be moved up or down or laterally or diagonally and one can not only study the type of movement on the edges of the organ but also get some idea of the changing volume. Careful studies have been made not only of the heart and blood vessels but of disturbance in respiration and in the movements of the diaphragm in diseases such as asthma and tuberculosis. There is a chapter on movements of the esophagus stomach and duodenum, and the urologists are also making use of the new technic. Although any one who looks through this book must be impressed with the tremendous amount of work that has been done and with the possibilities for exact recording of movements in various organs he will be inclined to wonder how much new can be learned which will be of value either to the physiologist or to the clinician. One wonders how often this new technic will give information that cannot be secured in the older and simpler ways. So far as we can see now, it looks as

if it will be most useful clinically in the study of those puzzling cases in which it is hard to distinguish between a tumor of the mediastinum and an aneurysm. The book is well written and beautifully illustrated and it will doubtless be a classic in the literature of roentgenology.

An Index of Treatment. By Various Writers Edited by Robert Hutchison M.D. LL.D. F.R.C.P. Consulting Physician London Hospital Eleventh edition Fabrikoid Price \$12 Pp 1020 with 147 Illustrations Baltimore William Wood & Company 1936

In this day when it is so much the fad to gather together a number of treatises within single covers and call it a book, it would seem almost unpatriotic to question the soundness of the method as exemplified in an American conglomeration of the sort, since the custom is in fullest bloom on our side of the Atlantic. The present book being British, however, one may perhaps point out with impunity that it shares with all other tomes similarly put together the fault of lacking completely in cohesion and readability. Presented in the same format and by the same publishers, this index may be looked on as the companion volume to the equally well known index of differential diagnosis of which French is the editor. Dr Hutchison who presides editorially over the present volume, has as contributors ninety-one men, some writing only one article and some a great many. It is certainly an inclusive work in our crude American jargon offering something for what-is-the-matter-with-you, be it mere symptom, well recognized disease entity, or a complaint of the rarefied nature of erythrocytosis crurum puellarum frigida. Despite this encyclopedic nature, the general practitioner for whom the compilation has been put together must be at a loss nevertheless to understand the many imbalances in space allotment. For example, he will find not quite two pages on the important subject of eczema, yet immediately preceding in the alphabetical arrangement are twenty-two pages on electrotherapeutics. Similarly there are three pages on intubation in diphtheria, which has never yet been learned from a book, but the medical treatment of duodenal ulcer is given only slightly more than one page. The surgical treatment of aneurysm has eight pages, hypnotism a similar number, there are sixteen on foreign bodies in the air passages and esophagus, twenty-five on fractures of the long bones (including much on open operative procedures), and so on. The fact that the book has continued to appear at irregular intervals for nearly thirty years indicates that it must be much relied on by its British medical public, but one wonders whether the eminence of many of the contributors in their special fields and the general excellence of their articles entirely compensate for the facts that with few exceptions each author writes only of his own experiences and that there is not a single bibliographic reference in the entire 1,020 pages.

Über Sternalpunktionen. Von Elsa Segerdahl Med. Lic. Akademisk arhandling som med tillstånd av medicinska fakulteten vid Uppsala Universitet för ernående av medicine doktorsgrad offentlig försvaren Acta medica Scandinavica supplementum LXIV Paper Pp 162 with 16 Illustrations Uppsala Appelbergs Boktryckeriaktiebolag 1935

This is a comprehensive monograph on sternal bone marrow puncture. The first three chapters are devoted to a historical sketch of bone marrow puncture, the structure of bone marrow and the technic of sternal puncture. The author points out that with an increasing volume of bone marrow puncture material the absolute number of cells becomes lowered as the result of the admixture of blood with specific bone marrow cells. She therefore advises working with a small volume and she has selected 0.2 cc. Even with this precaution the absolute number of cells may vary and the values in different punctures in the same individual show decided fluctuations. The following chapters are concerned with a description of the morphology of normal and pathologic sternal punctures. The author discusses the various views concerning cell development but follows the belief that the youngest myeloblasts are the same stem cells of the erythrocytic and granulocytic systems. The point is emphasized that too much stress should not be placed on one bone puncture, as a different picture may be obtained in the same person with multiple punctures. Bone marrow puncture is only a needle investigation of a great organ of heterogeneous composition. Refinements of counting technic also are desirable. The limitations of the various technics are discussed. The author could not find any essential difference in the bone marrow picture for young men and young women, but in older persons the specific bone marrow elements were lower

in both sexes. In the pathologic conditions involving the erythropoietic tissue two types of anemia are chiefly considered, essential hypochromic and pernicious anemia.

The author's investigations substantiate the results obtained by other authors that in essential hypochromic anemia there is hyperplastic marrow with normal erythrocyte precursors while in pernicious anemia there is hyperplasia with a megaloblastic type of regeneration, which disappears during a remission. By bone marrow puncture the author was able to demonstrate the effectiveness of an injectable antipernicious anemia preparation more quickly than by any other method. With large doses of parenterally injected liver extract a reversal of the bone marrow picture can be seen in twenty-four hours. The use of bone marrow punctures in leukemia is next discussed and the author cites cases in which the procedure has been a distinct diagnostic aid. The author cites cases that clinically presented a characteristic picture of malignant neutropenia whereas bone marrow puncture disclosed the correct diagnosis. Cases of leukemia with prolonged anemic and leukopenic prodromes were correctly diagnosed only by sternal puncture. The final chapter summarizes the value of bone marrow puncture in diagnosis of obscure anemias and leukemia. Arnkin's method is preferred to that of Seyforth because of its simplicity. The author emphasizes, however, that a single cell poor puncture cannot be evaluated as a sign of bone marrow atrophy because of blood mixing with the marrow tissue. A high cell count with pathologic forms is more significant. A familiarity with normal bone marrow puncture smears is most desirable as a prerequisite in interpreting pathologic cases correctly.

The monograph is mainly a consideration of technic and interpretation of bone marrow punctures. The author shows a working knowledge of her subject and her statements are based on carefully evaluated results. The pertinent literature is well handled and the text is well illustrated with black and white photomicrographs. The work should prove of great value to the hematologist and the pathologist.

Theory and Practice of Psychiatry. A Psychiatric Textbook for Neuropsychiatric Specialists and General Practitioners of Medicine. A Reference Handbook for Psychologists, Sociologists, Pastors and Other Professional Readers. By William S. Sadler, M.D., Chief Psychiatrist and Director, The Chicago Institute of Research and Diagnosis. Cloth. Price \$10. Pp. 1,231. St. Louis: C. V. Mosby Company, 1936.

This large tome covers much more material than does the usual textbook in psychiatry. Most textbooks have been confined to a study of the psychoses with an occasional chapter concerning the neuroses and possibly another on mental hygiene, but the present volume is different. It consists of five parts. There is a historical introduction before the first part which is somewhat fragmentary, mentioning in a few paragraphs ancient, medieval and modern psychiatry with reference to Freudian and Adlerian psychology and schools of purely psychologic thought, such as the gestalt school. The present work is the first that incorporates a significant discussion of Adolf Meyer's psychobiology. One question, whether Dr. Meyer would be entirely convinced of the accuracy of this discussion. The author's discussion of this theory as involved in psychiatry goes into a great many different points of view. It discusses mental mechanisms, the unconscious and the subconscious, the significance of dreams, and other attitudes. It includes as do the works of other writers, a discussion of symptomatology, diagnosis and prognosis of mental disease entities and includes a description of methods of examining. The point of view is distinctly eclectic. The terminology of dynamic psychology is used to the extent that Freudian mechanisms are described in a condensed form but beyond that the author does not go.

Sadler's classification of disease entities can scarcely be accepted. It has never been presented before such groups as the Classification Committee of the American Psychiatric Association and there are spots where there are duplications and subclassifications which are of questionable significance to the psychiatrist who is actively engaged in the field.

The second part of the volume dealing with personality problems is a conglomeration of material taken from elementary books on child training rather superficial attitudes on the development of personality and also short chapters on family relationships and adult personality which after all are significant to the psychopathologist.

The third part of the volume is composed of a discussion of the neuroses which is interesting because of the fact that

for the first time the subject is extensively covered in a text book. However, here again there are duplications, and the author's attempt to combine all neuroses into either psychasthenic states, neurasthenic states or hysterias is open to grave question. There is insufficient discussion of the dynamics of these important subjects, but the author should be commended on the fact that this is the first textbook on psychiatry to go into the subject with any degree of completeness.

The fourth part is devoted to the psychoses. Here there is little difference between Sadler's presentation and that of the conventional psychiatric textbook.

The last part is devoted to psychotherapeutics. There are about 250 pages devoted to this important matter. Suggestion, hypnosis, rest and relaxation, play and recreation, and many other topics are discussed in brief and, while here again there is no tremendous depth to the discussion, the interested student will find much stimulating material. There is an excellent glossary at the end of the volume, although one must differ somewhat with some of Sadler's definitions. At the end of each chapter there is a bibliography largely consisting of elementary texts on the subject of the chapter rather than of specialized scientific articles.

The most severe criticism which can be laid against the volume is the fact that, while there is so much material which is included which is interrelated, on the other hand there is a great deal of duplication and considerable overemphasis on classification. Certainly the well trained psychiatrist is going to differ in many respects with Sadler's point of view and many probably will reject the book entirely, particularly because of its moral and religious undercurrent. For elementary students it may give a leading idea of psychiatry.

Les hépatonéphrites algues. Etude clinique anatomique et expérimentale. Par Jean Vague, assistant à la Faculté de médecine de Marseille. Travail de la clinique médicale du Professeur D. Olmer et du laboratoire de médecine expérimentale et d'anatomie pathologique du Professeur L. Cornil. Paper. Price 70 francs. Pp. 640 with 42 illustrations. Paris: Masson & Cie, 1935.

The author has attempted to correlate the clinical, anatomic and experimental features of hepatic and renal disease accompanying severe toxemias and infections under the caption "acute hepatonephritis." The book contains evidence and arguments on which the author bases his thesis, the subject being presented in nine chapters dealing with the historical aspects, clinical features, experimental phases and pathologic observations. Much emphasis is placed on etiology and pathogenesis. The bibliography is extensive, although mostly from the French literature. The typography is excellent and the photomicrographs are good. Hepatonephritis is regarded as a syndrome due to elective and systematic injury simultaneously to the liver and the kidneys, the term having been applied originally by Richiardi in 1890. The etiologic agents are varied, including such poisons as carbon tetrachloride, cinchophen, mercury, uranium, phosphorus, diphtheria toxin, and mushroom poison. Infectious agents, for example the spirochetes of infectious jaundice, the virus of yellow fever and generalized bacterial infection by both aerobic and anaerobic micro-organisms are frequent causes. The symptomatology is considered in detail under the syndromes "icteric," "vasculosanguine," "toxic" and "biologic." The clinical signs and symptoms for these types are presented in detail and are correlated with the chemical changes of the blood and urine. The chapter dealing with etiologic factors contains many case records supplying clinical details and chemical observations supporting the principal thesis of the author. Attempts to simulate these conditions experimentally are described in the chapter on experimental studies. Various kinds of animals were tested with such poisons as apol mushroom poison, uranium, cantharidin and the toxins of the diphtheria and perfringens bacilli, and the toxic syndrome simulated closely that observed in man. The pathologic changes also were similar to those found in man. The section on pathologic anatomy is well presented, illustrated by numerous photomicrographs. An attempt is first made to summarize present conceptions regarding inflammation of the liver and kidneys. Necropsy material is then described histopathologically and an attempt made to analyze the results. Finally, an anatomic classification of acute hepatonephritis is suggested. The concluding chapter contains a few suggestions with regard to treatment with emphasis on the importance of proper feeding with carbohydrate diuresis, alkalization and

the intravenous use of chlorides. The book as a whole represents a vast amount of labor in gathering together the clinical, experimental and pathologic facts relating to severe acute injury to the liver and kidneys. Clinicians interested particularly in metabolic disturbances of the liver and kidneys will find the book stimulating. Pathologists will be interested in the French view with respect to acute hepatic and renal disease.

Die Zuckerkrankheit. Von Prof. Dr. Wilhelm Falta. Paper. Price 15 marks. Pp. 322. Berlin & Vienna: Urban & Schwarzenberg, 1936.

This is a storehouse of the author's experience and of the literature on diabetes and is written in the best German style. It contains more than 1,100 references and a liberal share of these are articles that have been published during 1934, 1935 and 1936. Any student of diabetes will wish to possess the book. Professor Falta has been in the thick of diabetic work during the thirty years of his active medical career in Vienna; he has been a prominent clinician. These pages, therefore, allow one to see in perspective not only the contributions of Falta and his many associates to diabetes but the places these occupy in the unfolding of diabetic knowledge during the last generation. The text is written in a simple and attractive manner and makes easy reading for English speaking doctors, perhaps because of the author's sojourn years ago in the United States. The book contains facts and less of theory than certain of Falta's earlier writings. Professor Falta has kept in close touch with the work of American investigators and credit is given liberally to what has been done here. There are few pages in the book that do not contain some phrase, sentence or paragraph to be noted for future use. What one does miss comes from an evident lack of intimate association of the medical diabetic clinic with the surgical and obstetric diabetic clinics such as is in force in various parts of the United States. This has led the author to less optimistic conclusions about the desirability of aggressive surgery for gangrene and early delivery in the course of pregnancy than would otherwise be the case. The same holds true regarding the situation of diabetic children. One regrets that the author has not had an opportunity to see the larger camps for diabetic children, which are in this country such a feature in treatment. One's ideas regarding diabetes alter materially when privileged to see seventy diabetic children in camps during the course of one day, many of them taking insulin protamine. Such a visit awakens a hopeful attitude which it is hard to overestimate.

The Patient and the Weather. Volume I. Part 2. Autonomic Integration. By William F. Petersen, M.D. With the assistance of Margaret E. Milliken, S.M. Cloth. Price \$0. Pp. 781 with 366 illustrations. Ann Arbor: Edwards Brothers, Inc., 1936.

The author of this volume is developing from many angles what is a most unusual work. First of all the volumes are published beginning with the last and working forward. The present book is the second part of the first volume, leaving the first part of the first volume the only part now to be issued. There is a tremendous amount of information in this book, which is devoted to the influence of the weather on autonomic integration. Since the author now discusses in much detail comprehensive information about cyclonic circulation, temperature, humidity and other meteorological material, the real object of this ponderous research is beginning to be apparent. A brief summary of the book is almost impossible for all sorts of relationships, physical facts and characterologic phenomena are pointed out, discussed and illustrated. To pick out a few chapters, one might point out that there is a discussion of the urine with relation to volume, acidity, phosphorus effective meteorological rhythm and other subjects. There are chapters on headaches, colds, gastro-intestinal disturbances, moods and psychologic implications, growth reaction of children, studies in blood changes, and a large chapter is devoted to season, climate and climatic cycles as regards tranquillity and variability physiologic and chemical alterations morbidity and death. The book is summarized in a chapter entitled "The Human Organism as a Cosmic Resonator." This volume like the others is profusely illustrated with meteorological graphs, chemical diagrams, maps, and photographs of subjects and of clouds. There are innumerable tables, many thorough case histories, and a detailed bibliography after each chapter. Some of the graphs are extremely complicated having a multiplicity of changes in the many factors compared. All in all this monograph is a thoroughgoing piece of work which has some

tendency to bear out the author's various predilections about the relationship of the weather to bodily functions. The basic idea would seem to be that there are vascular and autonomic complexes which correlate with either temporary or long-time changes in the weather. It is difficult to point out any particular class of readers to whom the book will be most useful. It is too ponderous for the average physician, yet a physician or research man will want to know what Petersen has to say about the relation of the weather to his own particular field of interest.

Lehrbuch der Inneren Medizin. Von H. Assmann et al. Bände I und II. Third edition. Paper. Price 48 marks per set. Pp. 934 with 171 illustrations. 846 with 153 illustrations. Berlin: Julius Springer, 1936.

This appears just two years after the second edition. Every effort has been made to bring the book to date. A new chapter has been added on pathologic heredity of internal diseases written by Professor Siebeck. The chapter on general therapy by Professor Stachelin has been completely rewritten and the chapters on the diseases of the respiratory tract, metabolism, muscles, bones and joints have been thoroughly revised. The book is well illustrated and the roentgenograms, especially in the chapter on respiratory diseases, written by Assmann, himself a foremost radiologist, deserve favorable mention. There is an exhaustive subject index, an author's index is missing. The textbook in its present form fulfils its purpose as a valuable source of information for the student and the practitioner. The specialist probably will find his respective field not covered thoroughly enough and the literature especially American, not completely considered. As a whole, however, the difficult task of presenting a modern cross section of the present state of internal medicine has been met successfully.

Diseases of the Nose, Throat and Ear for Practitioners and Students. Edited by A. Logan Turner, M.D., LL.D., F.R.C.S.E., Consulting Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh. With the collaboration of J. S. Fraser, M.B., F.R.C.S.E., Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh, and others. Fourth edition. Cloth. Price \$6. Pp. 473 with 264 illustrations. Baltimore: William Wood & Company, 1936.

This deservedly popular textbook continues to remain among the best of its type in our language. The text is concise but lacks little in information necessary for the student, general practitioner or even the specialist desirous of authoritative opinion. The illustrations on the anatomy of the ear, nose and throat as well as those on clinical pathology cannot be too highly praised. They have been carefully selected and their clarity leaves nothing to be desired.

Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern. Röntgenatlas der Staublungenerkrankungen der Ruhrbergeleute. Von Dr. G. Schulte, Leiter der Röntgenabteilung am Knappschafts Krankenhaus Recklinghausen. Unter Mitarbeit von Dr. K. Husten, Prosektor der Ruhr Knappschaft am Knappschafts Krankenhaus Essen-Steele. Fortschritte auf dem Gebiete der Röntgenstrahlen. Ergänzungsband L herausgegeben von Prof. Grashey. Paper. Price 24 marks. Pp. 141 with 153 illustrations. Leipzig: Georg Thieme, 1936.

During the last five years this country has seen a frenzy of litigation centering about claims for silicosis among industrial workers. Often in these trials an unpraiseworthy medical spectacle has arisen because of the testimony of well meaning physicians lacking both experience and training to qualify them for technical testimony concerning silicosis and particularly the roentgenologic aspects of silicosis. Apparently a somewhat similar situation has arisen in Germany, for the purpose of this German roentgen atlas is better to acquaint the general practitioner with the x-ray characteristics of silicosis, silicotuberculosis and tuberculosilicosis. After a cursory discussion of the pathology of silicosis, its various degrees of severity and its status as an occupational disease, the greater part of this book is devoted to excellent reproductions in reduced size of roentgenograms. Part I presents twenty-five reduced size illustrations with two supplementary inserts of the actual size of the original film. The pictures in part I are designed to portray the different stages of silicosis alone and of silicosis associated with tuberculosis. Materials from twenty-six cases appear in part II, showing the evolution and progress of the disease, with emphasis on serial manifestations rather than on the finer details that are emphasized in part I. Two or three plates are shown for each case. An appendix of five plates is added to bring out the differential diagnosis between silicosis and tuberculosis. The reproduction of roentgenograms for publication purposes is nearly always unsatisfactory. This German publica-

tion, however, presents with great fidelity the appearance of nonstereopticon x-ray films. It is obvious that no reproduction can approach the original in clarity and refinement of detail, but here the printer's workmanship is of high order and constitutes a most commendable feature of this publication

Diseases of the Respiratory Tract. Eighth Annual Graduate Fortnight of the New York Academy of Medicine. By 21 contributors. Cloth Price \$5.50. Pp. 418 with 50 illustrations. Philadelphia & London: W. B. Saunders Company, 1936.

This comprises a series of lectures delivered before the graduate fortnight of the New York Academy of Medicine by specialists in the various phases of medical and surgical dealing with diseases of the respiratory tract. Manifestly it is impossible to give an adequate review of each lecture. The subject matter is well covered and the book can be recommended both to the general practitioner and to the specialist.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Acts Replacement of Broken Lens as Constituting the Practice of Optometry.—The replacement of an ophthalmic lens, said the Supreme Court of Appeals of West Virginia, by an optical mechanic by means of taking the measurements from a broken lens and manufacturing a new lens from such measurements does not constitute the practice of optometry in West Virginia. It constitutes the replacement of the lens by doing the "merely mechanical work" by an optical mechanic, as authorized by the optometry practice act.—*State v McGrail (W Va)*, 183 S E 686

Workmen's Compensation Acts Silicosis and "Wage Loss"—Marsz, a man 59 years of age who had been in the employ of the Schaefer Monument Company for twenty-six years, was discharged when a physical examination, required of all employees of the company by its new insurance carrier, showed that he had silicosis. Marsz claimed at that time, however, to the examining physician that he was all right and could continue to do his work. Subsequently he instituted proceedings under the Wisconsin workmen's compensation act before the industrial commission. An examiner for the commission found that Marsz was suffering from silicosis in an advanced stage, caused by the exposure in his employment, and that since as a result thereof he was incapable of more than slight physical exertion and could be employed only in occupations which involve so-called light work he was 50 per cent disabled. The industrial commission confirmed those findings and awarded compensation accordingly. From a judgment of the circuit court for Dane county affirming the award the employer and his insurance carrier appealed to the Supreme Court of Wisconsin.

In general, the Wisconsin workmen's compensation act provides for compensation for such disability whether resulting from accidental injury or from occupational disease arising out of and in the course of employment, as results in a wage loss. The appellants seem to have contended that Marsz had suffered no wage loss. Wage answered the Supreme Court of Wisconsin is dependent on two factors. Time and rate of compensation. In *Zurich General Accident and Liability Ins Co v Industrial Commission* 203 Wis 135 233 N W 772 this court held that a worker who was transferred from a place of exposure to outside work at a diminished wage suffered a wage loss that is his rate of compensation per unit of time was diminished. The real source of difficulty the Supreme Court continued in silicosis cases is that many men suffering from the ailment in some of the various stages are able to and do continue to work and receive full compensation therefor long after they have sustained what has been referred to as a medical but what might be more properly referred to as a pathologic disability and therefore as a matter of fact sustain no wage loss. It is because the legislature has so far seen fit to withhold compensation for physical impairment which does not

immediately result in the physical incapacity of the claimant to work that the difficulty in these cases springs. There is a feeling that a person who has sustained loss of physical vigor and had his system invaded by foreign substances which may and often do result in impairing his ability to work and not infrequently in death, should have compensation. If, however, the legislature had intended the term "disability" to embrace so called medical or pathologic disability as distinguished from actual physical incapacity to work, it would undoubtedly have said so.

This court, continued the Supreme Court has previously held that the injury or wage loss to be compensable must be sustained at a time when the relation of employer and employee existed. An amendment to the workmen's compensation act adopted thereafter (Laws, 1933, c. 314 sec 27) provides that the time of injury or the occurrence of disability shall be deemed to be the last day of work for the last employer whose employment caused the disability. This obviously refers the time of injury or disability back to a point in time when the employer and employee relationship existed. Even if a plant shuts down and an employee is discharged and is not thereafter employed if he is thereafter disabled the time when his disability occurs is referred to the last day of employment which caused his disability. In the case at bar when it is considered that admittedly Marsz is suffering from silicosis that as a result of it he is incapable of more than light physical exertion, that by reason of his physical incapacity he can be employed only in occupations which involve so-called light work, this court cannot say that there is no evidence to sustain the finding of the industrial commission that Marsz has sustained a wage loss, which, measured by the rate of compensation he had theretofore received, amounts to 50 per cent. The award in favor of the worker accordingly was affirmed.—*Schaefer & Co v Industrial Commission (Wis)* 265 N W 390

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Boston, Oct. 20-22. Dr. Franklin P. Lowry, 313 Washington St., Newton, Mass., Secretary.
American Association of Railway Surgeons, Chicago, Nov. 5-7. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
American Clinical and Climatological Association, Richmond, Va., Oct. 26-28. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
American College of Surgeons, Philadelphia, Oct. 19-23. Dr. George W. Crile, 40 East Erie St., Chicago, Chairman, Board of Regents.
American Public Health Association, New Orleans, Oct. 20-23. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
American Society of Tropical Medicine, Baltimore, November 18-20. Dr. N. Paul Hudson, Department of Bacteriology, Ohio State University, Columbus, Ohio, Secretary.
Associated Anesthetists of the United States and Canada, Philadelphia, Oct. 19-23. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
Association of American Medical Colleges, Atlanta, Ga., Oct. 26-28. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
Association of Military Surgeons of the United States, Detroit, Oct. 29-31. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
Central Association of Obstetricians and Gynecologists, Detroit, Oct. 15-17. Dr. Ralph A. Reis, 104 South Michigan Blvd., Chicago, Secretary.
Central Society for Clinical Research, Chicago, Nov. 6-7. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
Delaware Medical Society of Rehabilitation, Oct. 12-14. Dr. William H. Speer, 917 Washington St., Wilmington, Secretary.
Inter State Postgraduate Medical Association of North America, St. Paul, Oct. 12-16. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.
New York State Association of Public Health Laboratories, Albany, Nov. 6. Miss Mary B. Kirkbride, New Scotland Avenue, Albany, Secretary.
Omaha Mid West Clinical Society, Omaha, Oct. 26-30. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
Southern Medical Association, Baltimore, November 1-20. Mr. C. L. Loran, Empire Building, Birmingham, Ala., Secretary.
Southwestern Medical Association, El Paso, Texas, Nov. 17-21. Dr. Orville E. Eckert, 116 Mills Street, El Paso, Secretary.
Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5. Dr. Kelly Cox, 1713 Pacific Ave., Dallas, Secretary.
Tri States Medical Society of Texas, Louisiana and Arkansas, New Orleans, Oct. 26-27. Dr. John M. Ellis, Mt. Pleasant, Texas, Secretary.
Vermont State Medical Society, Burlington, Oct. 15-16. Dr. W. J. Ricker, 33 Main St., St. Johnsbury, Secretary.
Virginia Medical Society of Staunton, Oct. 1-15. Dr. J. C. Edwards, 1207 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

50: 175-344 (July 15) 1936 Partial Index

- Studies in Wave-Mechanics of Muscle Form and Function. II. Experimental Biophysics of External Form and Internal Structure of Cross Striated Muscle and Tendon. E. J. Carey. Milwaukee —p. 175
Relation of Lymphoid Tissue to Process of Blood Production in Avian Bone Marrow. H. E. Jordan. Charlottesville, Va. —p. 249
Biological Properties of Mare Gonadotropic Hormone. H. H. Cole. Davis, Calif. —p. 299
Development of Anus in Human Embryo. E. M. Tench. Buffalo —p. 333

American Journal of Cancer, New York

27: 421-652 (July) 1936

- *Thymoma and Thymic Hyperplasia in Myasthenia Gravis. Observations on General Pathology. E. H. Norris. Minneapolis —p. 421
Cancer Family of Warthin. Further Report. I. J. Hauser and C. V. Weller. Ann Arbor, Mich. —p. 434
Influence of Hormones on Breast Hyperplasia and Tumor Growths in White Rats. J. Heiman and O. F. Krehbiel. New York —p. 450
Liposarcoma Produced by 1, 2-Benzpyrene. C. D. Haagensen and O. F. Krehbiel. New York —p. 474
Fate of Intravenously Injected Tumor Cells. S. Warren and Olive Gates. Boston —p. 485
Pigmentary Response in *Phoxinus laevis*. Effect of Blood from Patient with Melanosarcoma. E. B. Astwood and C. F. Geschickter. Baltimore —p. 493
Hemoglobin Levels in Various Degrees of Susceptibility to Spontaneous Tumors. L. C. Strong. New Haven, Conn. —p. 500
Gross and Microscopic Diagnoses in Mouse Tumors at Site of Mammary Glands. A. M. Cloudman. Bar Harbor, Maine —p. 510
Influence of Complete Blockage of Nipple on Incidence and Location of Spontaneous Mammary Tumors in Mice. Elizabeth Fekete and C. V. Green. Bar Harbor, Maine —p. 513
Extrachromosomal Influence in Relation to Incidence of Mammary and Nonmammary Tumors in Mice. W. S. Murray and C. C. Little. Bar Harbor, Maine —p. 516
Spontaneous Incidence of Lung Tumors in Relation to Incidence of Mammary Tumors in an Inbred Strain of Albino Mice (Strain A). Preliminary Report. J. J. Buttner. Bar Harbor, Maine —p. 519
Evidence for an Endocrine Factor in Etiology of Mammary Tumors. H. C. Taylor, Jr., New York —p. 525
Further Studies on Relation of Functional Activity to Mammary Carcinoma in Mice. H. J. Bagge. New York —p. 542

Thymoma and Thymic Hyperplasia in Myasthenia Gravis—Norris is of the opinion that pathologic changes may be found in the thymus in cases of myasthenia gravis in direct ratio to the care with which they are sought. With the addition of the four cases described here and the six reported elsewhere since 1917 the incidence of thymic lesions remains at 50 per cent. This figure probably expresses the frequency of grossly recognizable lesions of the thymus. It seems possible, however, that thymic lesions which have produced little or no macroscopic alteration of the suprapericardial tissue may have been overlooked in some of the reported cases. The author lists in chronological order the cases of myasthenia gravis in which the necropsy disclosed thymic lesions. In discussing the material the author points out that of the thirty-five cases tabulated eighteen were classified by the various authors as representing instances of an enlarged or persistent thymus and seventeen cases were classified as tumors of the thymus. These reported cases therefore, are divided into two almost equal groups. A casual survey of the descriptive data indicates that the line of separation is not sharp and that the bases for distinctive classification are uncertain. In some of the cases listed as enlarged thymus the thymic mass was as large as or larger than certain of those designated as tumors. The difficulties encountered in differentiating between a benign thymoma and an enlarged thymus in which there is an extensive epithelial hyperplasia is well illustrated by two of the cases of the group of four

described in detail. The author decided to designate the pathologic conditions that have been regarded as benign tumors of the thymus as conditions of extreme epithelial hyperplasia and the pathologic conditions that have been regarded as instances of enlargement or persistence of the thymus as conditions of moderate epithelial hyperplasia.

Endocrine Factor in Etiology of Mammary Tumors

—According to Taylor, any attempt to define the stage to which clinical and experimental work has carried the theory of an endocrine cause for breast cancer is difficult and is certain to receive little approval. He nevertheless offers the following points as perhaps the most important. 1 The ovarian hormone is essential for the development and preservation of the epithelium of the mammary gland. Without it there is no tissue on which any carcinogenic agent may act. This is the most obvious reason why cancer of the breast does not develop in early castrates or in untreated male mice. 2 The development of breast cancer in mice after the injection of large quantities of estrogenic substance may be brought about in several ways: (a) by a direct carcinogenic action comparable with that of various tar derivatives, (b) by increasing the normal physiologic impulse to proliferation until it produces atypical structures, (c) by the production of abnormal activities of the cells the secretions of which provide the carcinogenic factor. 3 Tumors of the human mammary gland are also dependent on the ovary at least to the extent that the normal tissue from which the tumors must arise are provided by the ovarian hormone. 4 An existent ovarian function is apparently essential for the common types of chronic mastitis and fibro-adenoma, the development of which is practically limited to the years of mature sexual life. This is not true of carcinoma, which may appear long after the menopause. 5 With the neoplastic disease once established, a marked response to variations in glandular function, such as those incident to pregnancy and the menopause, is noted in chronic mastitis and fibro-adenoma. A moderate reaction to these changes is observable in some cases of carcinoma. 6 Some evidence of a glandular dysfunction can be found in certain cases of chronic mastitis, but hormone states comparable to those necessary to produce mammary carcinoma in mice by the injection of estrogenic substance are unknown in women. 7 There is no clinical evidence yet of any specific endocrine dysfunction as the cause of human breast cancer.

American J Digestive Diseases and Nutrition, Chicago

3: 375-456 (Aug.) 1936

- Classification of Gastroduodenal Ulcers on Basis of Their Etiology. S. C. Robinson. Chicago —p. 375
New Experiences with Simmonds' Disease. K. Herman. Subotica, Yugoslavia —p. 382
Value of Routine Red Cell Sedimentation Test in Gastro-Enterology. M. Golob and H. Borowsky. New York —p. 387
Bacteriologic Findings in Disease of Biliary Tract. Relationship of Gastric Acidity to Biliary Tract Infection. J. R. Twiss and E. C. Hanssen. New York —p. 391
Fate of Bacteria Injected Directly into Cecal End of Colon. L. Weinstein. New Haven, Conn. —p. 397
Nature of Peptic Ulcerations. Factor of Spasm. M. E. Steinberg. Portland, Ore. —p. 399
Studies in Absorption of Undigested Proteins in Human Beings. VI. Absorption of Unaltered Protein from Abnormal Gastro-Intestinal Tract. I. Gray and M. Walzer. Brooklyn —p. 403
Chemical Nature of Antianemic Principle. J. Schultz. Ann Arbor, Mich. —p. 405
Functional Changes of Vermiform Appendix Producing Diverticular Sacculations of Spastically Contracted Organ. A. Galambos. New York —p. 412
III. Rate of Absorption of Salicylates and Effect of Certain Compounds on Rate of Absorption of Acetylsalicylic Acid from Stomach and Intestine. W. B. Bradley, J. G. Schnedorf and A. C. Ivy. Chicago —p. 415
*Control of Gastric Acidity in Peptic Ulcer by Alkalinized Powdered Whole Milk Tablets. P. H. Wosika. Chicago —p. 419
Extrapancratic Hypoglycemia. J. F. Briggs and H. Oertling. St. Paul —p. 436
Regional Ileitis. F. G. Connell. Oshkosh, Wis. —p. 438
Gastro-Intestinal Bleeding in Disease of Liver and Biliary Tract. S. S. Lichtman. New York —p. 439

Alkalinized Milk Tablets in Peptic Ulcer—Wosika points out that in a previous paper he and his collaborator Emery evaluated the effect of the routine Sippy treatment on the control of acidity in forty-six cases of duodenal ulcer. It was found that symptoms were abolished and that the free acidity was adequately controlled in slightly more than half. A

second report compared the use of a liquid mixture of powdered whole milk, in addition to an alkali powder, with the routine Sippy procedure and demonstrated that the former was the more effective as a neutralizing agent. The purpose of the present study is to determine the value of tablets composed of powdered whole milk and varying amounts of alkalis on the neutralization of the gastric acidity in patients with peptic ulcer. For this study twenty-six patients with peptic ulcer were selected from the medical clinic of Northwestern University. Roentgenologic evidence for ulcer was positive in all save two cases and the clinical history of both of these exceptions was too typical to doubt. All the patients were men between the ages of 26 and 66 years. The average age was 44 years. Ulcer symptoms had been present from one to twenty years, with an average of nine years. Three of the group had gastric ulcers and because they had relatively high acid values as determined by a histamine gastric analysis they were included in the series. The patients reported to the clinic about once a week in the morning and all meals (the usual foods allowed on the fourth week Sippy regimen) were served at Passavant Memorial Hospital at 8 a. m., 1 p. m. and 6 p. m. Between meals they were given tablets or milk and cream. The author found that tablets composed of powdered whole milk (12.5 Gm.), sodium bicarbonate (0.6 Gm.) and calcium carbonate (2 Gm.) are slightly more effective than the routine Sippy procedure as regards the neutralization of the gastric acidity.

American Journal of Diseases of Children, Chicago

52 259-512 (Aug.) 1936

- *Pectin Agar Preparation for Treatment of Diarrhea of Infants. M. Winters and C. A. Tompkins. Indianapolis.—p. 259
- Basal Metabolism of Tuberculous Children. Anne Topper and H. Rosenberg. New York.—p. 266
- Prognosis of Rheumatic Infection in Childhood. Statistical Study. Rachel Ash. Philadelphia.—p. 280
- *Abdominal Syndrome of Rheumatic Disease in Childhood. J. B. Wolfe. Philadelphia and C. J. Brim. New York.—p. 296
- Allergy Due to Menotoxin of Pregnancy. M. A. Perlstein and A. Matheson. Chicago.—p. 303
- Familial Congenital Adrenal Syndrome. H. Jacobziner and A. Gorfinkel. New York.—p. 308
- Anthropometric Study of New Born Infants of Japanese Parents in America. P. K. Ito. Los Angeles.—p. 321
- Pulmonary Gangrene in Children. J. W. Epstein. Cleveland.—p. 331
- Generalized Lipoidosis in Case of Amaurotic Familial Idiocy. C. Davison and S. A. Jacobson. New York.—p. 345
- Pneumothorax of the New Born. Report of Third Case of Infectious Type with Comments on Pathogenesis of This Type. S. J. Wilkinson. Decatur, Ill.—p. 361
- Calcinosis Universalis and Calcinosis Circumscripta in Infancy and in Childhood. Three Cases of Calcinosis Universalis with Review of Literature. J. L. Rothstein and Sara Welt. New York.—p. 368

Pectin-Agar Preparation for Treatment of Diarrhea of Infants—Winters and Tompkins show that objections are raised to scraped raw apple as a treatment for diarrhea. A substitute is offered, made with pectin agar-agar and a dextrin-maltose preparation. Observations and data are recorded on twenty-four patients treated with this substitute and on eighteen patients treated with scraped raw apple. Data are offered to show that the group treated with the substitute responded better than the group fed scraped raw apple.

Abdominal Syndrome of Rheumatic Disease—Wolfe and Brim call attention to a group of children in whom recurrent abdominal cramps lasted from six months to several years and apparently were the only subjective manifestation of an active phase of rheumatic disease. They present cases illustrating the importance of recognizing the existence of an abdominal syndrome of rheumatic disease. They think that excepting indiscretion of diet active childhood rheumatism is probably the most important cause for such abdominal symptoms. Provided the attacks of cramps are transitory and apparently inconsequential. Other manifestations of the active phase of rheumatic disease are frequently associated with it such as pallor, weight fixation in spite of a properly balanced diet, irritability without any apparent cause, twitchings and tics often looked on as habit spasms because of their chronicity, aches and pains in various joints and muscles often attributed to rapid growth and enuresis after the control of the bladder has been established. In spite of the fact that several of these manifestations are invariably seen in any case the condition

is frequently overlooked, and an active rheumatic state is often unrecognized until organic heart disease is accidentally discovered during the course of a physical examination. The authors are convinced that the greatest degree of cardiac change occurs during the unrecognized active phase of the disease.

American Journal of Physiology, Baltimore

116 245-494 (July) 1936 Partial Index

- Adaptation to Transposition of Eye Muscles. J. M. D. Olmsted. M. Margutti and K. Yanagisawa. Berkeley, Calif.—p. 245
- Carbohydrate Metabolism in Adrenalectomized Animals. Mary V. Buell, I. A. Anderson and Margaret B. Strauss. Baltimore.—p. 244
- Effect of Prolonged Anoxemia on Heart and Spleen in the Mammal. E. J. Van Lier. Morgantown, W. Va.—p. 290
- Alterations in Electrical Field Produced by Changes in Contacts of Heart with Body. L. N. Katz, I. Gutman and F. H. Oeko. Chicago.—p. 302
- Blood Sugar and Glucose Tolerance at High Altitudes. W. H. Forbes. Boston.—p. 309
- Influence of Bile on Excretion of Sterol in Feces. A. Shapiro and H. Koster. Brooklyn.—p. 317
- Site and Mechanism of Antiketogenic Action of Insulin. I. A. Minsky. Cincinnati.—p. 322
- Influence of Partial Pressure of Oxygen on Body Temperature. E. Gelhorn and A. Janus. Chicago.—p. 327
- Chloride and Alkali Content of Duodenal Secretions and Their Relation to Gastric Acidity and Emptying Time. F. L. Apperly and M. K. Cary. Richmond, Va.—p. 337
- Effect of Good Electrical Conductors Introduced Near the Heart on Electrocardiogram. L. N. Katz, E. Sigman, I. Gutman and F. H. Oeko. Chicago.—p. 343
- Effects on the Heart Rhythm of Premature Stimuli Applied to the Pacemaker and to the Atrium. A. S. Gilson, Jr. St. Louis.—p. 358
- Lactic Acid in Rest and Work at High Altitude. H. T. Edwards. Boston.—p. 367
- Reflex Respiratory Effects from Intermittent Stimulation of Vagus and Superior Laryngeal Nerves. C. J. Hillenbrand and T. E. Boyd. Chicago.—p. 380
- Physiologic Significance of Electric Responses of Smooth Muscle. A. Rosenbluth, H. Davis and B. Rempel. Boston.—p. 387
- Sensitization of Sympathetic Ganglion by Preganglionic Denervation. W. B. Cannon and A. Rosenbluth. Boston.—p. 408
- Adequacy of Chemical Theory of Smooth Muscle Excitation. A. Rosenbluth and W. B. Cannon with assistance of B. Rempel. Boston.—p. 414
- Experiments on Intact and Adrenalectomized Dogs Subjected to Sodium and Chloride Depletion by Intraperitoneal Injections of Glucose. W. W. Swingle, W. M. Parkins and A. R. Taylor. Princeton, N. J.—p. 430
- Relation of Serum Sodium and Chloride Levels to Alterations of Body Water in Intact and Adrenalectomized Dog and Influence of Adrenal Cortical Hormone on Fluid Distribution. W. W. Swingle, W. M. Parkins, A. R. Taylor and H. W. Hays. Princeton, N. J.—p. 438
- Studies of Energy of Metabolism of Normal Individuals: A Standard for Basal Metabolism with Nomogram for Clinical Application. W. M. Boothby, J. Berkson and H. L. Dunn. Rochester, Minn.—p. 468
- Id. Comparison of Estimation of Basal Metabolism from (1) Linear Formula and (2) Surface Area. J. Berkson and W. M. Boothby. Rochester, Minn.—p. 485

Annals of Surgery, Philadelphia

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- Surgical Treatment of Irremovable Cancer of Pyloric Segment of Stomach. R. Maingot. London, England.—p. 161
- Mycotic Infection of Stomach. Report of Case with Perforation. C. Bearse. Boston and L. H. Pollock, New York.—p. 167
- Pathologic Changes in Exteriorized Gastro-Intestinal Grafts. T. S. Ransford and T. Eberhard. New York.—p. 175
- Solid Tumors of Mesentery. J. T. Hart. Columbia, Tenn.—p. 184
- Mechanism and Significance of Obliteration of Lumen of Vermiform Appendix. D. C. Collins. Los Angeles.—p. 199
- Postganglionic Sepsis Caused by Newly Described Hemophilic Anaerobic Bacillus. W. A. Altemeier. Detroit.—p. 212
- Aspiration of Breast Cysts. F. S. Mathews. New York.—p. 220
- *Chronic Progressive Postoperative Gangrene of Abdominal Wall. H. C. Willard. Tacoma, Wash.—p. 227
- Elective Transverse Abdominal Incision. F. S. Lynn and H. C. Hull. Baltimore.—p. 233
- Sacrococcygeal Transrectal Approach for Repair of High Rectovaginal and Vesicovaginal Fistulas. J. C. A. Gerster. New York.—p. 244
- Ureteral Transplantation and Cystectomy. A. G. Brenizer. Charlotte, N. C.—p. 248
- Structures of Prostaticomembranous Urethra. Newer Methods in Management of Difficult Lesions. H. H. Young. Baltimore.—p. 267
- Rectal Stricture Due to Lymphopathia Venereum. Clinical and Pathologic Study of Six Cases Observed at Necropsy. L. Liechtenstein. New Orleans.—p. 279
- Suppurative Arthritis of Sacro-Iliac Joint. J. B. L. Friscom. Boston.—p. 289
- *Serum Phosphatase in Fracture Repair. C. L. Mitchell. Detroit.—p. 314

Chronic Progressive Postoperative Gangrene of the Abdominal Wall—Willard reports the case of a woman aged 57, who underwent an operation for acute appendicitis. The appendix showed beginning gangrene. The woman was

discharged from the hospital on the nineteenth day following operation. Soon after, however, the wound began to break down rapidly, and, in spite of the fact that the drainage from the depths of the wound gradually ceased there developed a progressive spreading gangrenous ulceration of the skin and subcutaneous tissues. The patient was given a blood transfusion and antistreptococcus serum without apparent benefit. The first bacteriologic cultures that were taken on her readmittance to the hospital showed an enormous number of hemolytic streptococci with an occasional colony of staphylococci and *B. coli*. From the necrotic tissue a hemolytic staphylococcus was obtained. Cultures taken from a piece of tissue excised from the red area adjacent to the normal skin gave, by the anaerobic technique, a growth of nonhemolytic anaerobic streptococcus in pure culture. After two generations, this nonhemolytic anaerobic streptococcus showed slight aerobic growth on Loeffler's blood serum. This corresponds culturally to the organisms which Meleney had found in similar cases. He has designated this as "microaerophilic." Following radical excision, the wound was dressed daily with gauze saturated with a suspension of zinc peroxide in sterile water, which was covered with petrolatum gauze to prevent drying. Later skin grafting was done. The author says that Meleney described several different types of superficial infectious gangrene. Examples of the acute types are "gas gangrene" and hemolytic streptococcus gangrene. Neither produces marked local pain or sensitiveness, but both produce extreme prostration and result in a high mortality. The case described in this report represents one of the more chronic forms of infectious gangrene. In the conclusion the author points out that this condition represents a rather rare instance of chronic infectious, superficial progressive gangrene which belongs to a definite clinical group and which should be recognized clinically. It is differentiated clinically from other types of superficial gangrene by its slow and relentless progression, its severe local symptoms and the absence of severe systemic symptoms. It is characterized bacteriologically by the fact that it is produced by two organisms neither of which alone may be virulent but which in combination produce a virulent infection. It is important that the nature of this infection be recognized early and that wide and radical excision be employed promptly.

Serum Phosphatase in Fracture Repair—Mitchell studied a series of seventy-five unselected major fractures in order to determine the possible clinical significance and the relationship between the healing of fractures and the activity of the enzyme phosphatase of the serum. Serial determinations of serum phosphorus and phosphatase were made the day following fracture and thereafter at weekly intervals for the following three weeks. In a few cases the studies were followed until union was complete. With the knowledge that diet especially a high carbohydrate diet, could produce variation in the serum phosphatase level, it was thought advisable to keep these patients on a standard diet. However, it was found to be very difficult to keep this number of patients on a weighed diet over the length of time necessary and accordingly a uniform diet was planned and given in all fracture cases under study. The Bodansky method of phosphatase determination has been used throughout in this series. According to Bodansky the average normal adult serum phosphatase reading is 26 units, with levels ranging from 1.5 to 4. In serial determinations on normal individuals taken at weekly intervals an average fluctuation of about one unit has been found. Accordingly in computing whether there has been an increase or decrease in the serial determinations in this series, allowance has been made for this error. On the basis of his studies the author reaches the following conclusions: 1. There is not a consistent rise in the serum phosphatase level in the course of fracture healing, although in many cases there is a slight increase, while in a smaller group there is a decrease. 2. The increased serum phosphatase activity following fractures appears to be secondary to the increased activity at the fracture site and not vice versa. 3. The serum phosphatase level following fracture is not an index of the healing or rate of healing of the fracture. 4. No significant change in the blood phosphorus level following fracture was noted.

Archives of Internal Medicine, Chicago

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- Pituitary Basophilism (Cushing's Syndrome) Report of Verified Case with Discussion of Differential Diagnosis and Treatment R. H. Freyberg, P. S. Barker, L. H. Newburgh and F. A. Collier, Ann Arbor, Mich.—p. 187
- Calcium and Phosphorus Metabolism in Verified Case of Pituitary Basophilism R. H. Freyberg and R. L. Grant, Ann Arbor, Mich.—p. 213
- Obesity and Energy Exchange in Verified Case of Pituitary Basophilism R. H. Freyberg and L. H. Newburgh, Ann Arbor, Mich.—p. 229
- *Chronic Pulmonary Infection Due to Friedländer Bacillus. Further Observations L. H. Collins Jr., Philadelphia—p. 235
- Convulsive Seizures in Adult Life A. E. Walker, New Haven, Conn.—p. 250
- Morphologic Changes in Heart in Experimental Myxedema B. Webster and C. Cooke, New York—p. 269
- Effect of Alkaline Therapy for Peptic Ulcer on Utilization of Dietary Iron in Regeneration of Hemoglobin F. Kellogg and S. R. Mettler, San Francisco—p. 278
- Etiologic Significance of Streptococci in Epidemic Encephalitis I. Incidence of Streptococci in Cultures from Patients with Encephalitis in St. Louis and from Normal Controls, and Characteristics of Various Strains Isolated A. L. Burdon, E. W. Thurston, P. L. Varney and J. Bronfenbrenner, St. Louis—p. 285
- *Studies of Mechanism of Circulatory Insufficiency in Raynaud's Disease in Association with Sclerodactylia M. Prinzmetal, Los Angeles—p. 309
- Infectious Diseases. Review of Current Literature H. A. Reimann, Philadelphia—p. 329

Chronic Pulmonary Infection Due to Friedländer Bacillus—Collins points out that in a previous publication his associates and he described the clinical and roentgenologic features of three cases of pneumonia with recovery and expressed the belief that the organism responsible for the production of the pulmonary lesion was the Friedländer bacillus (*Bacillus mucosus-capsulatus*). The author's purpose in the present paper is to present follow-up data on these three original cases and to record observations on a fourth nonfatal case in which they succeeded in isolating the Friedländer bacillus in a culture of the blood during the height of the pneumonia. One of the three patients on whom follow-up data are presented was still living more than seven and one-half years after the attack of pneumonia. One patient died of an apparently unrelated infection two years after the attack of pneumonia. The third patient was lost from view. The fourth patient, in whom the Friedländer bacillus was isolated from both the sputum and the blood during the acute stage of the pneumonia, is now doing manual labor, more than two and one-half years after the attack of pneumonia. At the site of the original pneumonic lesion there are still marked clinical and roentgenologic signs. The end result of pneumonia due to the Friedländer bacillus, both clinically and roentgenologically, almost completely simulates chronic pulmonary tuberculosis in that it produces cavitation, displacement of the trachea, elevation of the domes of the diaphragm and elevation of the hili of the lungs.

Raynaud's Disease in Association with Sclerodactylia—Prinzmetal states that sclerodactylia and scleroderma are often associated with Raynaud's disease. Most frequently the changes in the skin occur after the vasospastic syndrome has been present for some time. Sclerodactylia occasionally occurs without pathologic arterial spasm and in some cases may precede the attacks of local asphyxia of the fingers. Occasionally the changes in the skin and the vasospastic attacks in the fingers begin simultaneously. The author demonstrates that Raynaud's syndrome in association with sclerodactylia has a more severe clinical course and presents a more difficult therapeutic problem than uncomplicated Raynaud's disease, and the experimental vascular reactions differ in the two conditions. Important causal factors in sclerodactylia are the tight, inelastic skin and subcutaneous tissue of the fingers which constrict the blood vessels and diminish the blood flow. In sclerodactylia the areas of greatest circulatory insufficiency coincide with the areas of greatest change in the skin. Determinations of the temperature of the skin verify this contention. The atrophy of the terminal phalanx in sclerodactylia is probably due to pressure of the tight skin. Whereas sympathectomy raises the temperature of the normal skin and the temperature of the skin of patients with uncomplicated Raynaud's syndrome, little or no rise in temperature takes place if severe sclerodactylia is present, and no clinical improvement follows. It was demonstrated in one

case that, if the tight skin of the finger tip is relaxed, slight but definite improvement in circulation, as determined by the color and temperature of the skin, takes place. If a binding of about the same degree of tightness as that present in sclerodactylia is placed on a normal finger, the abnormal vascular reactions found in sclerodactylia may be duplicated. Vasodilator impulses induced by the Landis heat test for arterial occlusion cause little or no increase in the temperature of the skin in sclerodactylia. Similarly, if a normal finger is bound, little or no rise in temperature takes place. A simple test for arterial occlusion may be performed by the injection of histamine into the terminal phalanx of the finger or toe to be tested. If no organic occlusion is present, the temperature of the skin rises in a short time. In cases of severe sclerodactylia, no rise in temperature takes place after the injection of histamine. If the normal finger is bound, similar results are obtained. The use of intermittent suction, recommended by Herrmann and Landis, may cause an increase in circulation in cases of sclerodactylia, as determined by the temperature and color of the skin, though sympathectomy has failed to produce improvement. It is suggested that the mechanism of improvement is the relaxation of the tight skin. This seems to be the only method available at present which may prove beneficial.

Archives of Ophthalmology, Chicago

16 173 340 (Aug.) 1936

- Diathermic Treatment of Giant Holes in Retina H. Weve Utrecht Netherlands—p. 173
Medullated Optic Nerve Fibers Accompanying Oxycephaly and Other Cranial Deformities M. M. Abeles New York—p. 188
William Porterfield M.D. An Almost Forgotten Opticophysiologist. B. Chance Philadelphia—p. 197
Peripheral Vision in Art L. Mills Los Angeles—p. 208
Roentgen Treatment for Disease of the Eye S. de Grösz Budapest Hungary—p. 220
Cyst of Vitreous Attached to Retina Report of Case L. H. Schwartz New York—p. 230
Relationship of Sinusitis to Optic and Retrobulbar Neuritis with Especial Reference to Etiology and Treatment. E. H. Campbell Philadelphia—p. 236
Biochemistry of Lens VIII. New Proof of Presence of Vitamin C in Crystalline Lens J. Bellows and L. Rosner Chicago—p. 248
Conjunctivitis Due to Fusospirochetal Infection J. H. Dunnington and Deborah Khorazo New York—p. 252
Myopia and Orbital Congestion H. Lipschutz London England—p. 255
Corneal Dystrophy in Three Generations with Genealogical Chart M. Freiliger New York—p. 257
Phospholipid Content of Cataractous and Sclerosed Human Lenses Biochemical Study of Lenticular Changes P. W. Salt Iowa City—p. 271
The Spectacle Industry J. E. Lebensohn Chicago—p. 284

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17 385 480 (July) 1936

- Temperature of Skin Surface. W. Bierman New York—p. 393
Low Voltage Currents F. Nagelschmidt London England—p. 404
*Influence of Short Wave Radiation on Constituents of Blood D. Kobak Chicago—p. 413
Unusual Complication of Treatment by Hyperthermy I. D. Stein Mount Vernon N. Y.—p. 419
Temperature Elevations During Pelvic Short or Ultrashort Wave Treatment E. A. Horowitz S. Gottesman D. Derow and M. Schwarzschild New York—p. 422
Clinical Comparison Between Diathermy and Short Wave Diathermy R. Kovacek New York—p. 432
Modern Technique in Hydrotherapy H. J. Behrend New York—p. 436

Short Wave Radiation and Blood—On the basis of an investigation of the action of short waves on the constituents of the blood Kobak arrives at the following conclusions: 1. Short wave therapy apparently influences the various constituents of the blood. 2. Minimal dosage of short wave radiation tends to raise the refractometric index, increase the viscosity, raise and lower the blood sugar and increase the sedimentation rate. 3. The changes produced are significant of the internal influence only of short waves and require more detailed correlation on actual clinical material. 4. The applicability of the experimental data to therapy is clearly indicated by their biophysical and biochemical character: the ultrashort regions having a more selective action and a more prolonged heating effect than is found in the longer regions of short wave diathermy.

Colorado Medicine, Denver

33 521 592 (Aug.) 1936

- The Colorado Medical Foundation Is Now a Fact H. T. Setzman Denver—p. 534
Diagnosis of Cancer of Lung C. O. Giese Colorado Springs—p. 53
Diagnosis and Treatment of Traumatic Injuries of Intra Abdominal Viscera J. B. Farley Pueblo—p. 543
Nursing Education and the Hospital A. C. Bachmeyer Chicago—p. 562

Florida Medical Association Journal, Jacksonville

23 61 112 (Aug.) 1936

- Collapse Therapy of Pulmonary Tuberculosis L. Limbaugh Jacksonville—p. 73
The Surgery of Pulmonary Tuberculosis A. A. Morris Jacksonville—p. 74
Moving Picture Demonstration of X-Ray Films W. M. Shaw Jacksonville—p. 77
Control of Syphilis with Especial Emphasis on Adequate Treatment as a Control Measure R. A. Vonderlehr Washington D. C.—p. 78
*Chronic Cervicitis C. D. Hoffmann Orlando—p. 81
Endometriosis I. M. Hay Melbourne—p. 83
Medical Days with Legal Shadows Carol C. Webb and F. C. Melten, Pensacola—p. 85
Lobectomy with Recovery Report of Case L. W. Martin Sebring—p. 90

Chronic Cervicitis—Hoffmann says that, in any treatment for chronic cervicitis with erosion, eversion or laceration, one must bear in mind the histopathology of the condition, that is, the malarrangement of the columnar and squamous epithelium. Whatever line of treatment is adopted, success will not be reached until the pathologic condition is corrected and the underlying and superficial tissues are restored to their normal arrangements and cell layers. Among the plans of treatment are (1) the various chemical applications with or without tamponage, (2) electrical cauterizations, (3) coagulations, (4) radium, (5) surgical and, last but not least the Crossen conization with the cutting electrode. The author evaluates these different methods and states that at his hospital conization with the Crossen loop has been done with good success. The technic is that used in the Hyams loop but has the distinct advantage over the Hyams loop of accomplishing in one revolution what would take many revolutions for the Hyams loop. The operation with the Crossen loop requires less than one minute and gives a cleanly coned out operative field. It is very unusual for any free bleeding to occur and rarely, if ever, are sutures required. If the conization is properly done and the current is not too hot, little scar tissue is encountered. The author dilates the cervix to about twice its size before conization. He feels that in this way the infected tissue is packed together, the extra edema is pushed out of the tissue and there is not the danger of taking out more than the desired amount of normal tissue at the base of the infected tissue. Other advantages of the conization method besides the assurance of getting the diseased tissue and the reduced amount of cicatricial tissue postoperatively are that it is an ideal method of removing tissue for biopsy, the hospitalization is from thirty-six to seventy-two hours, and there is little loss of blood and no shock to the patient. The author observed more than 200 of these cases all the way from operation through the various stages of healing. Ordinarily the slough has completely gone in from seven to ten days, leaving a clean nonirritated cervix. The cervix at the end of three weeks presents the clean regular appearance of the nulliparous cervix.

Johns Hopkins Hospital Bulletin, Baltimore

59 172 (July) 1936

- *Mortality in Tuberculin Positive Infants Miriam Brailey Baltimore—p. 1
Influence of Adrenal Cortex on Distribution of Body Water C. A. Harrop Baltimore—p. 11
Water and Salt Hormone of Adrenal Cortex G. A. Harrop Baltimore—p. 25
Surgical Treatment of Gastric and Duodenal Ulcers I. R. Trumble and D. L. Reeves Baltimore—p. 35

Mortality in Tuberculin-Positive Infants—Brailey reports that 170 children of whom seventy-two were white and ninety-eight colored found to be infected with tuberculosis before reaching 2 years of age were kept under observation for periods ranging from one to five years. They can be divided into sixty-seven who showed parenchymal involvement of the

lungs at initial roentgenoscopy and 103 who showed no definite parenchymal lesion when first examined. Twenty-two roughly one third of those with a pulmonary lesion when the infection was discovered, were ill and presented signs of disease such that a diagnosis could usually have been made by ordinary clinical means. The remaining patients gave no indication of their infection, and a diagnosis could not have been made without the tuberculin reaction and the use of roentgen examination. By calculation, following actuarial procedures, the total five-year mortality for white children was found to be 13 per cent and for the colored children 31 per cent. Approximately 70 per cent of the deaths that occurred in five years of observation fell within the first year, mostly within the first six months following the discovery of the infection. This refers to deaths from all causes, but, with few exceptions tuberculosis was the immediate cause of death. Of those admitted with involvement of the lung parenchyma, 31 per cent were dead within the first year of observation, no difference being observed between the two races in case fatality. Among those whose initial chest plates showed no parenchymal involvement, mortality during the first year subsequent to the discovery of infection was 68 per cent. No deaths occurred among the forty-nine white children of this group, but there were seven deaths among fifty-four colored children. In the entire group of colored children observed, mortality has been more than twice that observed in white children. When the pulmonary lesion has developed sufficiently to be readily demonstrable by roentgen ray the fatality is about the same in white as in colored children. However, lesions of this extent are much more frequent in the colored than in the white, and this appears to account for the fact that the gross mortality in the colored is so much higher. In both white and colored children, mortality has been more than twice as high in those known to be infected during the first six months of life as in those whose infection was discovered between the ages of 6 months and 2 years. In about 78 per cent of the white and 64 per cent of the colored children of this study there was intrafamilial contact with a proved sputum positive case. The children of each race with known exposure showed a slightly higher mortality than children not known to have been exposed. The difference in mortality is not statistically significant and a detailed study of a larger series must be made to determine the bearing which continued exposure may have on severity of lesion.

Journal of Experimental Medicine, New York

64 161 332 (Aug 1) 1936

- Quantitative Studies on Antibody Purification. I. The Dissociation of Precipitates Formed by Pneumococcus Specific Polysaccharides and Homologous Antibodies. M. Heidelberger and F. E. Kendall. New York—p. 161.
- Survival of Virus of Poliomyelitis in Oral and Nasal Secretion of Convalescents. S. D. Kramer, A. E. Sobel, L. H. Grossman and B. Hoskwith. New York—p. 173.
- Epidemiology of Lymphocytic Choriomeningitis in White Mice. E. Traub. Princeton N. J.—p. 183.
- Complement Fixation Reaction with Pneumococcus Capsular Polysaccharide. K. Goodner and F. L. Horsfall Jr. New York—p. 201.
- Active Immunization of Guinea Pigs with Virus of Equine Encephalomyelitis. III. Quantitative Studies of Serum Antiviral Bodies in Animals Immunized with Active and Inactive Virus. H. R. Cox and P. K. Olitsky. New York—p. 217.
- Id. IV. Effect of Immune Serum on Antigenicity of Active and Inactive Virus. H. R. Cox and P. K. Olitsky. New York—p. 223.
- Studies on Suprarenal Cortex. V. Influence of Cortical Hormone on Excretion of Water and Electrolytes in Suprarenalectomized Dog. G. A. Harrop, W. M. Nicholson and Margaret Strauss. Baltimore—p. 233.
- Changes in Outlying Bone Marrow Accompanying Local Increase of Temperature Within Physiologic Limits. C. Huggins and B. H. Blockson Jr. Chicago—p. 253.
- Increase in Reticulo-Endothelial Cells in Outlying Bone Marrow Consequent on Local Increase in Temperature. C. Huggins and W. J. Noonan. Chicago—p. 275.
- Studies on Natural Immunity to Pneumococcus Type III. II. Certain Distinguishing Properties of Two Strains of Pneumococcus Type III Varying in Their Virulence for Rabbits and Reappearance of These Properties Following R→S Reconversion of Their Respective Rough Derivatives. M. F. Shaffer, J. F. Enders and C. J. Wu. Boston—p. 281.
- Id. III. Correlation of Behavior in Vivo of Pneumococci Type III Varying in Their Virulence for Rabbits with Certain Differences Observed in Vitro. J. F. Enders, M. F. Shaffer and C. J. Wu. Boston—p. 307.

Journal of Immunology, Baltimore

31 158 (July) 1936

- Reticulo Endothelial System and Anaphylaxis in Dog. M. A. Mills and C. A. Dragstedt with assistance of F. B. Mead. Chicago—p. 1.
- Permeability of Lungs to Antibodies. J. P. Fox. Chicago—p. 7.
- Group Specific Agglutinins in Rabbit Serums for Human Cells. I. Normal Group Specific Agglutinins. C. A. Stuart, P. B. Sawin, K. M. Wheeler and Shirley Battey, Providence R. I.—p. 25.
- Id. II. Immune Group Specific A Agglutinins. C. A. Stuart, P. B. Sawin, A. M. Griffin and K. M. Wheeler. Providence R. I.—p. 31.
- Hemolytic and Combining Capacities of Pneumococcal Extracts. Winifred S. Hull. New Haven Conn.—p. 37.
- Comparison of Bactericidal Action of Human and Guinea Pig Blood on Strains of Meningococcus with Mouse Mucin Test for Virulence. N. Silverthorne and D. T. Fraser. Toronto—p. 43.
- *Behavior of Immediate and Delayed Cutaneous Reactions to Bacterial Nucleoproteins in Asthmatic Patients. F. A. Stevens and L. Jordani, New York—p. 51.

Cutaneous Reactions in Asthmatic Patients—Stevens and Jordani prepared from broth cultures the nucleoproteins used for intracutaneous testing. All the patients studied had asthma. Some were sensitive and others nonsensitive to the common allergens. Tests were first done with the nucleoproteins of the hemolytic streptococcus, Streptococcus viridans, Micrococcus catarrhalis, the influenza bacillus and Staphylococcus aureus. Subsequently some of the patients were tested only with the proteins with which positive reactions had been obtained previously. All the nucleoproteins elicited both immediate and delayed reactions. The immediate reactions may have been due to traces of carbohydrates. This possibility is mentioned because immediate reactions have been evoked by intracutaneous injections of the specific carbohydrates of pneumococci and staphylococci in patients infected with these bacteria. The immediate and delayed reactions to the hemolytic streptococcus, the influenza bacillus and Streptococcus viridans were usually transient, although in a few instances delayed reactions continued positive for several months. The immediate reactions to staphylococcus and the delayed reactions to Micrococcus catarrhalis were usually of the persistent type. The persistence of these two reactions accounts in part for the high percentage of immediate reactions to the staphylococcus and of delayed reactions to Micrococcus catarrhalis when patients are tested consecutively with a number of bacteria among which these two kinds are included. The observation that both immediate and delayed reactions seldom occur at one site of inoculation with a nucleoprotein has been confirmed in the present study. Whereas sixty-three immediate reactions and fifty-three delayed reactions occurred independently of one another, in only six instances were wheals followed by delayed, tuberculin-like reactions. This observation may now be extended with the statement that usually, when an immediate reaction is obtained with a bacterial nucleoprotein, in later tests the patient tends to react in the same manner. Immediate reactions are followed by immediate reactions on subsequent retesting and delayed by delayed reactions, the patient may, however, give an immediate response to one bacterium and a delayed reaction to another synchronously injected. Most reactions have varied in intensity in the course of time. A definite tendency exists on the part of the patient to react habitually to a bacterial nucleoprotein as he has reacted in the past. Attention should be directed to the parallelism between these recurrent reactions of similar type and acute exacerbations occurring in the course of certain chronic diseases. Two examples may be given. In rheumatic fever, pharyngeal reinfection with hemolytic streptococci is followed commonly by recurrence of the rheumatic syndrome. In asthma caused by infection, upper respiratory infections are usually followed by a recurrence of the asthmatic symptoms.

Maine Medical Journal, Portland

27 155 174 (Aug.) 1936

- More Recent Developments in Diabetic Treatment. E. R. Blaisdell. Portland—p. 155.
- Hematuria. C. E. Blaisdell. Bangor—p. 158.
- Death Due to Phenol Absorption Through Unbroken Skin. Review of Literature with Case Report and Autopsy. J. Gottlieb. Lewiston and E. Storey. Columbus, Ga.—p. 161.
- Poliomyelitis. G. H. Coombs. Augusta—p. 165.
- Services for Maternal and Child Health and for Crippled Children Under Social Security Act. Doris A. Murray, Washington D. C.—p. 165.

Missouri State Medical Assn. Journal, St. Louis

33 303 338 (Aug.) 1936

- Treatment of Arthritis with Mecholy Iontophoresis Report of Cases
G H Mathae St. Louis—p 303
Olivopontocerebellar Atrophy Case Presentation A L Skoog Kansas
City—p 317
Production of Prolonged Stimulation of Sympathetic Nerve Trunk
After Method of Burrows J H Hershey St. Louis—p 320
Problems of the Female Urethra E E Sexton St. Louis—p 323
Ten Year Mortality Study in Toxic Goiter W Bartlett Jr St. Louis.
—p 326

New England Journal of Medicine, Boston

215 177 222 (July 30) 1936

- Allergy to Aminopyrine Blood Studies Following Anaphylactic like
Shock in a Patient M B Strauss Boston—p 177
Physical Examination of Children Note F C McDonald Boston—
p 189
Methylene Blue Therapy in Nitrobenzene Poisoning Case Report H
D Leinoff New York—p 191
Congenital Patent Urachus P J Mahoney Boston and D Ennis
Rochester N Y—p 193
Acute Anal Pain from Obscure Abscesses Their Diagnosis and Treat-
ment N D Smith Rochester Minn—p 195

215 223 264 (Aug 6) 1936

- Studies in Asthma I. Nose and Throat in Five Hundred Cases of
Asthma. F L Weille Boston—p 235
*Factors Influencing Development of Tuberculous Infection in Childhood
A S Johnson Springfield Mass—p 239
Progress in Treatment and Diagnosis of Syphilis 1935 A W Cheever
Boston—p 242

Tuberculous Infection in Childhood—This study was undertaken by Johnson in an attempt to evaluate some of the factors supposed to influence the development of tuberculous infection in children. The group in question comprised 375 children under 16 years of age who were examined at the Health Department Tuberculosis Dispensary in Springfield. Two hundred and eighteen children gave a definite history of contact with a known case of pulmonary tuberculosis, 157 non-contacts were presented for examination because of malnutrition recurrent respiratory infections or vague apprehension on the part of the parent. The examination of each child included a record of the age, sex, height, weight, temperature, cutaneous tuberculin reaction after forty-eight hours, roentgen examination of the chest, source of contact, period of exposure and an appraisal of domestic hygiene as a result of personal investigation of the home. On the basis of these studies the author reaches the conclusion that close and persistent association with a case of pulmonary tuberculosis especially one with a positive sputum, appears to be the most important predisposing factor in the development of tuberculous infection in children. It has not been possible to demonstrate that the age, sex or nutrition of the child, the source of contagion, or the sanitary conditions in the home play an important part in conditioning tuberculous infection in the child.

New Orleans Medical and Surgical Journal

89 57 110 (Aug.) 1936

- Auricular Fibrillation M D Hargrove Shreveport La—p 57
Coronary Occlusion M W Hunter Monroe La—p 62
Factors Influencing Morbidity and Mortality in Benign Tertian and
Estivo-Autumnal Malaria M Shushan and O Blitz New Orleans
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*Roentgen Ray Treatment of Hay Fever S Hatchette Lake Charles
Ind—p 70
Inquiry as to Nature of Chronic Appendicitis A R Hertzler Halstead
Kan—p 73
Operation of the Oscar Allen Tumor Clinic J T Cox New Orleans
—p 75
Contemporary Medicine and the "Soul" M M Black, New Orleans
—p 78
The United States Pharmacopeia O W Bethea New Orleans—p 81
Bacteriophage in Respiratory Disease H Hosen and J Signorelli New
Orleans—p 83
Painful Feet T M Oxford Shreveport La—p 86

Roentgen Treatment of Hay Fever—Hatchette used roentgen treatment in sixteen cases of hay fever employing 100 kilovolts 3 milliamperes 2 mm of aluminum filtration and a field of 10 by 10 cm. Irradiation was given over the region of the nose the rays being directed slightly caudad in an effort to avoid direct irradiation of the pituitary. The eyes of all patients were protected by lead foil as soon as the first symptoms of improvement here were noted and no patient received more than three irradiations without protection over the orbits.

No other form of treatment was used by any patient during the course of irradiation. Two of the patients were suffering from asthma during the course of treatment and failed to respond to the roentgen rays. One patient failed to return after the second treatment and no results were obtained. One patient failed to show any response from a light year round hay fever but was apparently completely relieved from her 'autumnal' type. The remaining twelve patients obtained complete relief from their symptoms following completion of their treatments and until the first frost, when nature automatically ended their hay fever season.

Ohio State Medical Journal, Columbus

32 701 796 (Aug 1) 1936

- *Cardiac Asthma. A C Ernestine and R. S Knowlton Clerla-
nd—p 717
Acute Appendicitis with Perforation Analysis of 261 Cases of Ruptured
Appendix A T Bowers Dayton—p 722
Warwick Ionization Treatment for Hay Fever and Hyperesthetic
Rhinitis with Further Report on Cases. B L Bryant Cincinnati
—p 726
Treatment of Infantile Eczema L H Dembo Cleveland—p 732
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Cardiac Asthma—According to Ernestine and Knowlton, cardiac asthma usually is due to sudden failure of the left ventricle, which has been damaged previously as the result of hypertension, coronary artery sclerosis or aortic valve disease. In a small group of patients with uncomplicated mitral stenosis similar attacks occur as the result of factors that increase the heart rate. When the heart rate is sufficiently accelerated the right ventricle expels blood into the pulmonary vessels more rapidly than it can pass through the narrowed mitral orifice and acute pulmonary congestion develops. Cardiac asthma due to left ventricular failure usually develops after the age of 50 years while the form due to uncomplicated mitral stenosis generally occurs in younger persons. The prognosis is poorer in the first group than in the second. In a series of forty consecutive cases of cardiac asthma on which the authors base this report the attacks were due to failure of the left ventricle in thirty-five and to the presence of uncomplicated mitral stenosis in three. Mitral stenosis was complicated by aortic insufficiency and hypertension respectively in two patients and the exact mechanism of the attacks could not be determined. The two most effective measures in the treatment of attacks of cardiac asthma are morphine and the upright position. Morphine should be administered hypodermically as early in the attack as possible, usually in doses of one-fourth gram (0.016 Gm.) and should be repeated if the patient does not appear to be improved within fifteen or twenty minutes. Cardiac asthma is attended characteristically by orthopnea. It is probable that the increase in vital capacity that accompanies the change from the recumbent to the erect posture contributes importantly to the relief experienced in the latter position. In patients with cardiac asthma due to failure of the left ventricle, morphine and the upright position may at times fail to relieve the patient sufficiently. In the absence of anemia venesection should be carried out with the removal of from 250 to 500 cc. of blood. If cardiac asthma progresses to acute pulmonary edema in spite of the administration of morphine and venesection either strophanthin or digitalis should be given intravenously. Occasionally, cardiac asthma may be relieved by the administration of glyceryl trinitrate particularly in patients with severe hypertension. A patient who has experienced an attack of cardiac asthma due to failure of the left ventricle should be treated as any other individual who presents evidence of impaired myocardial reserve. In those who have suffered more severe attacks a period of absolute rest is advisable and should be followed by strict limitation of activity. Restriction of fluids and the administration of diuretic drugs also are valuable measures. In patients with cardiac asthma due to

uncomplicated mitral stenosis it is of great importance to avoid exertion and emotional upsets. Sedatives should be given in daily divided doses to those patients who display evidence of emotional instability.

Psychiatric Quarterly, Albany, N Y

10: 365-528 (July) 1936

- Tuberous Sclerosis. Diffuse Neurospongiosis. A Terraro and G J Doolittle. New York —p 365
Simulated Foolishness and Mental Puerilism in Psychoses. P Milic. Kings Park N Y —p 417
Report of Treatment of Severe Case of Pellagra and Alcoholism with Recovery. M M Harris. P P Polak and J R Blalock. New York —p 438
Treatment of Prepsychotic Personalities of Schizoid and Cycloid Types. A J Goshine. Utica, N Y —p 454
Psychoses Associated with Hyperthyroidism. G R Jamieson and J H Wall. White Plains N Y —p 464
Relationship of Posttraumatic Central Nervous System Pathology to Clinical Psychiatric Syndrome. O J McKendree. Utica N Y —p 481
Hereditary and Environmental Factors in Causation of Dementia Praecox and Manic Depressive Psychoses. H M Pollock. B Malzberg and R G Fuller. Albany N Y —p 495

Public Health Reports, Washington, D C

61: 947-988 (July 17) 1936

- Important Causes of Sickness and Death. R H Britten —p 947
Malaria Control Activities of Tennessee Valley Authority. E L Bishop —p 970
Rat Bite Fever. Spirochetes in Naturally Infected White Mice. Mus Musculus. E. Francis —p 976

Surgery, Gynecology and Obstetrics, Chicago

63: 129-272 (Aug) 1936

- Measurement of Harmfulness of Dusts for Humans Through Agency of Animal Reactions, with Special Reference to Lesions Produced by Silica as Basis of Comparison. C P McCord. Cincinnati. R L Fleming. Harriet Ainslee and J Johnston. Detroit —p 129
Response of Mammary Gland to Prolonged Stimulation with Ovarian Hormones. I G MacDonald, Cornwall N Y —p 138
Effects of Administration of Thorium Dioxide. A J Fleming and W H Chase, Montreal —p 145
Vascularity of Benign and Malignant Lesions of Stomach. Comparative Study with Clinical Correlations. N W Thiessen. Rochester. Minn —p 149
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When to Remove Drainage Tube in Common Bile Duct Drainage. R F Carter. New York —p 163
Ovarian Function and Occurrence of Menopausal Symptoms Following Hysterectomy. R Marx. H R Catchpole and B J McKennon. Los Angeles —p 170
Technic for Simultaneous Exposure and Operation on Adrenals. H H Young. Baltimore —p 179
Technic of Gastric Resection for Carcinoma. Critical Review. G T Pack and Isabel M Scharnagel. New York —p 189
Repair of Rupture of Male Urethra. Report of Eight Injuries from Falling Astride a Manhole Cover. V J O'Connor. Chicago —p 198
Injection Treatment of Hernia. F I Harris and A S White, San Francisco —p 201
Prophylaxis in Gynecology with Especial Reference to Immediate Care of Postpartum Cervix. B H Goff. New York —p 212
Squamous Cell Epithelioma of Extremities. P J DeBell. Passaic, N J and T D Stevenson. Canton. China —p 222
Precaution in Stab Wound Colostomy. G W Taylor. Boston —p 230
Sudden Occlusion of Arteries of Extremities. Study of 100 Cases of Embolism and Thrombosis. R E McKechnie and E V Allen. Rochester. Minn —p 231
Pelvic Abscess in Women. Complications and Management with Study of 328 Cases. D R Jensen. New York —p 241

Common Bile Duct Drainage.—Carter shows that surgical drainage of the common bile duct is generally advocated for stones, cholangitis, pancreatitis and cholangitis with chronic fibrosis of the duct. The advisability of introducing a tube into the common duct is not taken up by the author, but rather the methods in use to determine that the goal of drainage has been reached. The relief of obstruction by drainage can be determined to have been accomplished when the sphincter of Oddi responds to the food test. Clamping the tube to determine the state of the sphincter of Oddi is not a necessary procedure. The presence of pus in the biliary drainage may be taken as the period of active inflammation within the duct. Daily cultures of the biliary drainage are not reliable in determining the necessary drainage period. Sedimentation of bile with crystalline formation, especially of calcium bilirubinate, should cease before the tube is withdrawn. Pancreatic ferments in the biliary drainage contraindicate removal of the tube before the sphincter of Oddi has been definitely restored to normal, as shown by the food test. Daily bile salt deter-

mination of the biliary drainage, as has been previously determined, is a distinct aid in treating liver failure in patients with a badly damaged hepatic system the result of obstruction and infection. Prolonged drainage of the common duct does not seem to be essential in most cases to meet the requirements for which drainage was instituted. Careful analysis of the biliary drainage and response of the sphincter of Oddi are essential in determining the time of drainage necessary. A careful analysis of the case during the postoperative period, with special attention to the function of the sphincter of Oddi, to the chemistry of the bile and to microscopic study for crystalline sediment and pancreatic ferment determination, is of great importance in the administration of specific postoperative medical therapy. Earlier removal of the common duct drainage tube may be possible when specific postoperative medical therapy is instituted and carried out.

Ovarian Function and Menopausal Symptoms Following Hysterectomy.—Marx and his collaborators investigated twenty one cases in which total or supravaginal hysterectomy had been performed with as much ovarian tissue preserved as seemed advisable. In one case which showed good estrogenic output only a part of one cystic ovary had been preserved. In the majority of the cases four assays were made for estrogenic substance at weekly intervals and two or more estimations for the follicle-stimulating factor were made. They conclude that there is a striking contrast between the hormone picture and occurrence of 'hot flushes' following total hysterectomy and supravaginal hysterectomy. The clinical symptoms of the menopause appear earlier and more marked after total hysterectomy than after supravaginal hysterectomy. The preservation of even a small part of the uterus seems to have a retarding and mitigating effect on the appearance of retrogressive changes in the pituitary-ovarian function and the occurrence of menopausal symptoms. The studies seem to support the theory that the uterus elaborates a catalytic principle acting on some part of the pituitary-ovarian hormone mechanism, regulating its normal balance and functional harmony. The amount of output of estrogenic substance after hysterectomy is determined more by the biologic quality than by the amount of ovarian tissue retained. Occurrence of 'hot flushes' after hysterectomy is associated in nearly every instance with an increase of gonadotropic substance and in the majority of cases with a decrease of estrogenic substance. In a few cases manifesting 'hot flushes,' average amounts of estrogenic substance and in rare instances normal gonadotropic substance may be found. On the other hand, diminution or even complete absence of estrogenic substance and increase of gonadotropic substance, occurring independently or together, are not necessarily associated with 'hot flushes'.

Squamous Cell Epithelioma of Extremities.—DeBell and Stevenson point out that considerable difference of opinion exists regarding the proper treatment of squamous cell epithelioma of the skin. At the Stuyvesant Square Hospital this type of cancer has been treated by surgical removal. The authors discuss sixty one cases of the upper and lower extremities treated in this manner. Fifty-one were on the upper limb and ten on the lower. The authors reach the following conclusions: 1 Squamous cell epithelioma is not a common type of tumor. 2 Squamous cell epithelioma is found chiefly in those of the cancer age. 3 Because of the predisposing factors, this type of tumor is more common in men. 4 By far the greatest number, forty-three, appeared on the dorsum of the hand. 5 The majority are of grade 1, histologically. 6 Duration of the lesion seems to have no relationship to metastasis. 7 Metastases to regional lymph nodes were found only in cases with larger lesions, the smallest being 3 by 3.5 cm in diameter. 8 All lymph nodes showing metastases were palpable before operation. 9 Dissection of the epitrochlear lymph nodes should be considered if the lesion extends over the ulnar aspect of the hand. 10 Routine dissection of regional nodes in cases of epithelioma originating in burn scars is advocated. 11 Dissection of regional nodes should be performed in recurrent cases. 12 Although the number of cases of epithelioma on the lower extremities is not large, it appears that these are more likely to metastasize than lesions on the upper extremities. 13 There were no cases with generalized metastases. 14 Surgical removal is a satisfactory method of treatment.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48 337-398 (July) 1936

- Kaposi's Varicelliform Eruption. Epidemic of Sixteen Cases. A. D. McLachlan and Marjorie Gillespie—p. 337
Schaumann's Disease (Benign Lymphogranulomatosis). Account of Case. C. H. Whittle—p. 356
Note on Multiple Eruptive Xanthoma in Infants. Naevo-xantho-Endothelioma (McDonagh). H. G. Adamson—p. 366
Case of Pemphigus Vegetans with Investigations and Effect of Treatment on It. A. C. Bailey—p. 370

British Journal of Ophthalmology, London

20 385-448 (July) 1936

- Use of Flicker Phenomenon in Investigation of the Field of Vision. L. A. Riddell—p. 385
Retrosilluminator. J. G. Clegg—p. 410
Kinescopy. Objective and Subjective (Supplementary Remarks). S. Holth—p. 412
First Radius Figure for Subjective Astigmatism. S. Holth—p. 415
Cod Liver Oil as Local Treatment for External Affections of the Eyes. E. Stevenson—p. 416
Tattooing of Corneal Opacity with Gold and Platinum Chloride. J. N. Duggan and B. P. Nanavati—p. 419

British Journal of Tuberculosis, London

30 109-180 (July) 1936

- The Psychology of the Tuberculous. C. G. Learoyd—p. 111
Bronchosprometry. H. C. Jacobaeus—p. 114
Sources of Infection in Primary Tuberculosis of Childhood. C. H. C. Toussaint and E. J. MacIntyre—p. 125
Climate and Tuberculosis. A. Morland—p. 142
Tomography. Report on Method of X-Raying Sections of Body. J. W. Craig—p. 152
Relief of Laryngeal Pain. L. B. Stott—p. 155

Climate and Tuberculosis—According to Morland climate appears to have less influence on tuberculosis mortality than such factors as racial immunity and social conditions; there is none the less some evidence that warm damp climates are associated with a relatively high tuberculosis mortality. Climatic stimulation has a definite place in the treatment of tuberculosis but care must be taken not to expose to a highly stimulating climate patients whose powers of response are inadequate. In the selection of cases careful individualization is necessary, dyspnea from diminished vital capacity, cardiac arrhythmia and nervous instability all tend to be increased with rise in altitude. No air in the world can make up for the absence of medical guidance and discipline which a well conducted sanatorium provides. With some exceptions cases with symptoms of activity are best treated in the first place at a low or moderate altitude; selected cases with adequate powers of response should subsequently be sent to higher altitudes. More sedative climates of the Mediterranean type are suitable for patients with bronchitis and emphysema with little or no tuberculous activity.

Relief of Laryngeal Pain—Stott points out that the practice of blocking the internal branch of the superior laryngeal nerve introduced by Hoffman in 1908 still retains its popularity as a method of giving relief in dysphagia. It does not however relieve the agonizing pain that shoots from the pharynx to the ear during the act of swallowing. This pain is described by nearly all patients with a tuberculous lesion in the larynx and the attitude of the victim who places his forefinger over the temporal artery and his thumb under the angle of the jaw while he regards a bowl of cold gruel is familiar to every tuberculous worker. The normal consummation of the reflex of swallowing is prevented and the obstructed action of the stylohyoid muscle is apparently responsible for the characteristic shooting pain in the ear. Six nerves—the fifth seventh ninth tenth eleventh and twelfth—all take their part in the act of swallowing and therefore it is a matter for little surprise that the blocking of one branch of the tenth fails to relieve pain during swallowing though it does anesthetize satisfactorily the laryngeal mucosa. The stylohyoid nerve however is accessible at its point of division from the inferior dental nerve as it enters the mandibular foramen behind the projection of the lingula. The terminal branch of the facial nerve to the inferior edge of the posterior belly of the digastric muscle is also of

easy access, as the anatomic relations of the digastric muscles and its attachments to the hyoid bone have definite surface markings. Thus it is possible to block the branches of three cranial nerves to the parts concerned, leaving the ninth eleventh and twelfth unaffected. That is to say, by infiltrating the neighborhood of the posterior belly of the digastric muscle with a local anesthetic and at the same time blocking the stylohyoid nerve and the internal branch of the superior laryngeal nerve on both sides, it is possible to render the act of deglutition painless without interfering with mastication or the movement of swallowing, even though occasional unavoidable blocking of the inferior dental nerve produces anesthesia of the lower lip.

British Medical Journal, London

2: 57-108 (July 11) 1936

- Epidemic Poliomyelitis. Epidemiology Causes and Prevention. A. S. MacNalty—p. 57
Brain Size and Mentality. R. J. A. Berry—p. 62
*Mirror Test in Pulmonary Tuberculosis. R. C. Cohen and W. B. Wood—p. 65
Conservative Treatment of Laryngeal Diphtheria. J. H. Clarke—p. 66
Thrombosis of Axillary Vein. M. C. Oldfield and L. N. Pyrah—p. 68
Acetylcholine in Tobacco Amblyopia. H. C. Orr—p. 69

Mirror Test in Pulmonary Tuberculosis—Cohen and Wood think that the test should when possible, be carried out in the early morning. The patient and examiner sit as for ordinary indirect laryngoscopy and a large size mirror—for example, No. 6—is held with its surface horizontally above the larynx. The patient is instructed to give several short barking coughs and the mirror is thus sprayed with bronchial secretion. It is then withdrawn along the roof of the mouth, care being taken to avoid brushing its surface against the tongue. Flecks of yellowish secretion of pin head size are characteristic though not typical of tuberculous expectoration. Mucoid or watery secretion usually but not invariably yields a negative result. The flat of the mirror is now applied to one end of a slide and drawn along it, leaving a thin film which is dried and stained in the usual manner. The possibility that the slide may be contaminated when the mirror has been used in a previous test is remote but careful sterilization of the mirrors is essential. Dr. Hebert has suggested to the authors that the use of the all-metal mirrors now sometimes employed for indirect laryngoscopy might be a useful safeguard. On the basis of their experiences with this test the authors reach the following conclusions: 1. The examination of secretion ejected directly from the lungs and collected by a mirror held over the larynx is a quick and convenient method of demonstrating tubercle bacilli. 2. The mirror test frequently enables the confirmation of a diagnosis of pulmonary tuberculosis suggested by history, symptoms or physical signs to be made without the delay that must occur when the patient is given a sputum outfit. Difficulties in securing the return of sputum flasks by mail are obviated. This advantage will be especially appreciated by those who work in country districts or among uncivilized communities. 3. Malingerers may be circumvented and the patient who consciously or unconsciously swallows his sputum may be induced to supply a sample of pulmonary expectoration by this means. 4. Compared with the ordinary sputum test the mirror test to judge from this limited experience is more delicate and it may enable such accessory methods of examination as gastric lavage and bacterial investigation of the stools to be dispensed with. Though less delicate than the sputum concentration test it can be used when no sputum is available for that purpose.

Journal of Physiology, London

87 97-198 (July 21) 1936

- Oxygen Transport of Fetal and Maternal Blood During Pregnancy. R. G. Leibson, I. I. Likhitsky and M. G. Sax—p. 97
Formation of Glycogen in Liver of Anesthetized Cats with Various Specific Dynamic Action. C. Reid—p. 113
Insulin and Storage of Liver Glycogen in Anesthetized Cats. C. I. —p. 121
Influence of Salt Saturation on Urinary Response to Urinary (F. L. Lobe) Extract. K. I. Melville—p. 129
Action and Fate of Injected Posterior Pituitary Extracts in Dehydrated Cat. A. M. Jones and W. Schlapp—p. 144
Electrical Response of Motor Nerve to Simple and Repetitive Stimulation. J. Y. Bogue and H. Reubner—p. 159
Action of Adrenalin on Perfused Liver. J. I. D. Silva—p. 191
Some Observations on Denervated Spleen. J. Parrot and J. H. F. Elliott—p. 192

Lancet, London

2: 59-114 (July 11) 1936

- *Pulmonary Disease Due to Inhalation of Dust with Especial Reference to Silicosis E L Middleton—p 59
Etiology of Lymphadenoma Sensitized Vaccine of Elementary Bodies. M H Gordon—p 65
*Acute Alimentary Catarrh in the New Born W S Craig—p 68
Pernicious Anemia Followed by Carcinoma of Stomach S Silverman—p 71
Adenocarcinoma of Stomach and Hyperchromic Anemia N G Hulbert—p 74
Resection of Lower Esophagus and Cardia E G Muir—p 75

Pulmonary Disease Due to Inhalation of Dust—Middleton discusses the disorders that develop in workers with asbestos, sillimanite China clay, talc and French chalk mica and sericit. Certain conclusions regarding the etiology of silicosis may be drawn from the consideration of the occupations in which the disease occurs. Where silicosis has been caused exposure to the inhalation of silica in the uncombined state appears to have been present. With a dust cloud of moderate concentration, the disease develops slowly and the nodules of fibrous tissue appear at certain situations in the lungs. This occurs in grinders of metal, workers on sandstone and pottery workers. When the dust contains a very high proportion of free silica in a fine state of division and the concentration of particles in the atmosphere is high, the disease tends to develop rapidly. In such cases the fibrosis retains the nodular form and develops at the usual sites but it appears also in other parts of the structure of the lungs. This has been seen in flint grinding, sand blasting and abrasive soap manufacture. When the dust of free silica is inhaled mixed with certain other kinds of dust in important amount the arrangement and distribution of the resulting fibrous tissue may be modified. Such modifications have been found in workers in coal and hematite mines. When the inhaled dust consists of silica combined with bases, as silicates, some degree of change in the pulmonary tissue appears to result. In this respect asbestos dust is unique among silicates in the prevalence and severity of the disease which it causes. The physical form of asbestos differs from that of all other industrial dusts. The fibrosis produced in the lungs by the action of silicates differs from that produced by free silica, and the types can be distinguished by radiologic and histologic means. In certain states of the lungs, for example in the presence of tuberculosis, the action of silicates may be modified.

Acute Alimentary Catarrh in New-Born—Craig shows that there is still doubt about the relative importance of infection and disturbed metabolism as causes of the diarrheas of infancy. In the Royal Maternity Hospital Edinburgh, over a period of three and one half years, there were forty-one cases of infants developing symptoms of severe gastro intestinal disturbance. Of these, seventeen occurred in minor epidemic form. An important feature was the frequency with which symptoms appeared in infants healthy at birth. There were eleven fatal cases. The term acute alimentary catarrh has been applied to the cases under discussion, as it indicates primary involvement of the gastro intestinal tract by an acute catarrhal condition, irrespective of its inflammatory nature. There was an unmistakable similarity in these cases. Signs of mild dyspepsia appeared within forty-eight to seventy-two hours of the first introduction of cow's milk into the feeds. The infant became listless, the appetite less keen, and weight progress slower. The condition remained unchanged for one or two days. The stools then became increasingly loose and eventually watery in consistency and foul smelling. The stools were green or brown. Evacuations numbered from five to twelve in the day. Fever quickly followed the onset of diarrhea. It rarely exceeded 101 F. was irregular in character and fell by lysis. A progressive decline in weight commenced, vomiting once or twice in the day was common. Evidence of dehydration and toxic absorption was soon apparent. Weakness increased daily. In fatal cases death came gradually and was preceded by a period of semiconsciousness. In those who recovered a return of the temperature to normal was the first evidence of improvement, it was followed by diminution in the number of stools and a readiness to take weak milk mixtures. With the appearance of loose stools and fever, milk feeds were discontinued, and fluids given

by mouth were limited to sweetened water and weak tea. Rectal salines were employed in only a limited number of cases, they were seldom retained and tended to aggravate any inflammation of the lower bowel. Parenteral administration of a 5 per cent dextrose-saline solution proved invaluable and was adopted as a routine. Daily subcutaneous injections of from 30 to 50 cc were given, the interval was lengthened as fluid intake by mouth was increased. In the children in whom vomiting was distressing, improvement followed the removal of mucus by a single gastric lavage. In others, similar improvement resulted from the oral administration of 2 grains (0.13 Gm.) of sodium bicarbonate before feedings. Considerable benefit resulted from gentle washing out of the lower bowel when the motions were fetid or contained mucus. Liquid petrolatum (4 drachms, or 15 cc.) left in the rectum lessened the pain of defecation and the risk of excoriated buttocks. Petroleum emulsion (one-half drachm, or 2 cc.) and 2 minims (0.12 cc) of castor oil were given in mixture form three or four times daily. Brandy in small doses proved the most suitable stimulant. An attempt to reintroduce milk was made after the temperature had become normal. Prevention depends on removing risks of infection and on avoiding minor disturbances of digestion. Observations made in the present series suggest that the path of alimentary infection is often by the mouth. The view is held that the condition is primarily a result of infection. It rarely occurs in breast-fed infants. Intestinal catarrh resulting from digestive disturbance is an important factor favoring alimentary infection, and acute catarrhal conditions of the alimentary tract in the neonatal period may be responsible for dyspepsia in later infancy and early childhood.

Medical Journal of Australia, Sydney

1: 867-896 (June 27) 1936

- Whooping Cough Etiology and Treatment S W Williams—p 867
Differential Diagnosis of Organic and Functional Nervous Diseases W S Dawson—p 871
When Is Catgut Sterile? T H Small—p 878
*Results of Short Wave Therapy K R. Speeding—p 881

Results of Short Wave Therapy—Speeding points out that the short wave type of diathermy has not yet become universally recognized, for many regard it as being identical with the older (or long wave) diathermy. The result is that it is credited with only a limited field of application and that many patients who would benefit considerably from the therapy are treated by other methods on the assumption that the contraindications are the same as those of long wave diathermy. A brief description of the results of short wave therapy in twenty-five cases is given. The first patient had a variety of neuropathy together with moderately advanced rheumatoid arthritis, mucous colitis, vasopharyngeal catarrh and purulent tonsillitis. Instructive features of the case include the tonsillar reaction, suggesting that the therapy may be of value in many of these conditions, and the improvement of the catarrh. Among other conditions in which the author resorted to the short wave therapy were pelvic peritonitis, supra-orbital neuralgia, psoriasis, chronic inflammation of the semilunar bone, bleb formation over the base of the great toe, furunculosis of the leg, chronic mucosal thickening of both antrums, pansinusitis, hay fever, rheumatoid arthritis, monarticular osteo-arthritis, spondylitis, asthma, pulmonary fibrosis, periduodenitis, otosclerosis, periarthritic inflammation, synovitis and paronychia. In discussing the technique the author says that the short wavelength (6 meters or less) was not found to have any special value, so a longer one (24 meters, approximately) was adopted and appeared to be quite suitable for practically all purposes. One of the valve types of apparatus was used for the work as the spark gap machine was not considered to be efficient enough, especially when depth effect was particularly desired. Many different types of electrode were investigated. For general use the pad was found to be satisfactory. Its insulation may be composed of cloth surrounded by rubber, thus avoiding any likelihood of electrical shock and the possibility of any deep seated burn. For the majority of diseases a time of approximately ten minutes or less is suitable for the initial application. The dosage may be steadily increased after this but it is not considered advisable to allow the production of any reaction that is more than

temporary in its nature. In estimating the effects of the treatment one is impressed with the fact that in many conditions the response is poor, while in others the improvement is rapid and persistent. Thus it is obvious that short wave therapy cannot be regarded as a universal cure. But it is equally obvious that the indications for its use in certain cases are pronounced, and the ease of application combined with the freedom from any harmful results should commend the method both to the physician and to the patient. The advantages of roentgenologic control are mentioned.

Presse Medicale, Paris

44 1145-1160 (July 15) 1936

Infectious Neoplasms of Rabbit A Beclère.—p 1145

*Study of Variations of Blood Cholesterol M Lévy and L Gally.—p 1147

Study of Variations of Blood Cholesterol—Levy and Gally studied the blood cholesterol of patients suffering from hyperthyroidism during the course of treatment with roentgen rays. They believe that the level of blood cholesterol in patients having hyperthyroidism is as important as the clinical course and the basal metabolic rate. Thus, for example, the rapid and ample increase in the level of the blood cholesterol accompanying the clinical signs of improvement and the tendency toward the return to normal of the basal metabolic rate can indicate the discontinuance of further roentgen treatments of a thyroid gland. Similarly, when roentgen treatment is unsatisfactory, an early and rapid demonstration of this fact can be made with the aid of cholesterol determination.

Revue Française de Pédiatrie, Paris

12 317-452 (No 3) 1936

Meningeal Hemorrhage in the New Born B Tassovatz.—p 317

Cholecystitis in Children Zelditch Wurmman Jolkver and Guinditch.—p 351

*Attempted Treatment of Thrombopenic Purpura by Phenylhydrazine. A Wallgren.—p 370

Habitus and Constitution in Childhood and Adolescence E Schlesinger.—p 385

Milk as Source of Vitamin C E Stoerr.—p 427

Treatment of Thrombopenic Purpura by Phenylhydrazine—Wallgren observed four cases of purpura treated with phenylhydrazine, and the reactions differed widely. In most instances there was a considerable increase in the number of platelets accompanying the first administration of phenylhydrazine. This increase in platelets might or might not be associated with improvement in frequency and severity of hemorrhages. Cumulative effects were observed. It was also noted that a solution of phenylhydrazine rapidly loses its effectiveness, and therefore a freshly prepared solution should be used each time. In general the hemolytic effects of phenylhydrazine appear earlier than its irritative action on the osseous tissues (notably the multiplication of platelets). Therefore the increase in the number of platelets is almost always accompanied by a decrease in the number of erythrocytes. With the results of phenylhydrazine on this type of purpura so uncertain and the likelihood of producing hemolysis and anemia, the author believes that this medication should not be employed in the treatment of thrombopenic purpura.

Sang, Paris

10 789-896 (No 7) 1936

Gaucher's Disease in Adult Case P Merklen Mlle G Hoerner and J Warter.—p 789

Megakaryocytic Myeloid Splenomegaly Case P Émile Weil P Isch Wall S Perles and Scemama.—p 797

New Information on Action Mechanism of Blood Transfusion. N Feodorof K Barouline and Mme A Samatchef.—p 815

*Studies on Reticulocyte Behavior in Typhoid B Jochweds and A. Szejnberg.—p 833

Reticulocytes in Typhoid—Jochweds and Szejnberg attempted to study the function of the osseous medulla in typhoid by observing the behavior of the reticulocytes in the peripheral blood. Sixty-one patients (thirty-three males and twenty-eight females) ranging in age from 14 to 50 years were thus observed. During the second and third weeks of the typhoid the reticulocytes were below 3 per thousand in 73 per cent of

the cases, in the others they oscillated between 3 and 9 per thousand. The level was not much increased in the fourth and fifth weeks and it was not until the following weeks that a notable augmentation of reticulocytosis, from 7 to 26 per thousand, was noted. The common stimulants of the osseous tissue, such as hemorrhages, injections of horse serum, liver extracts and blood transfusions, produced a rapid and lasting increase in the number of reticulocytes. This fact suggests an inhibition of the osseous tissue rather than a complete suppression. Furthermore, reticulocytosis was markedly diminished in relapses of typhoid.

Schweizerische medizinische Wochenschrift, Basel

66 797-816 (Aug 22) 1936 Partial Index

Ischialgias E Stotzer.—p 797

*Experiences with Permanent Suction Drainage of Duodenum in Ileus and Peritonitis R Howald.—p 799

Research on Action of Sedatives of Sympathetic Nervous System in the Clinic. M Monnier and J Sterne.—p 801

Progress in Experimental Cancer Research K Ullmann.—p 803

Experiences with Permanent Suction Drainage—Howald shows that in ileus the gastric stasis is generally counteracted by lavage of the stomach. This method, although giving considerable relief in ileus as well as in peritonitis, has the disadvantage that its efficacy is of only short duration. In order to make the effect of this treatment more lasting, permanent gastric drainage by means of the usually introduced tube has been tried. The author points out that, whereas in German clinics the permanent gastric drainage is usually employed in peritonitis and in postoperative disturbances in the intestinal passage, some American clinics resort to this method also in the nonperitonitic forms of ileus, passing the tube down into the duodenum. In describing the method, he says that at his clinic in Basel the treatment is done with Pratt's modification of Wangenstein's apparatus. By the continuous suction, the stomach and the upper portions of the small intestine are gradually evacuated. Corresponding to the antiperistaltic waves of the small intestine in ileus, the evacuation takes place at intervals. Suction drainage is most effective in simple ileus of the small intestine, particularly when it is acute and incomplete, that is in all conditions in which otherwise a fistula of the small intestine is made. Moreover, the method can be used with hope for success also in subacute ileus and in other intestinal obstructions be they in the small intestine or in the colon. The author cites the histories of two cases in which beginning ileus could be counteracted by suction drainage alone. The method is helpful also in the later stages of ileus, as preparation for the operation because the suction drainage not only effects a mechanical relief but also has a detoxicating effect. To be sure it is necessary to keep the patient under careful observation, and, if there are signs of strangulation with a disturbance in the blood perfusion of a portion of the intestine, the operation cannot be postponed. On the basis of additional case reports, the author shows that permanent suction drainage is helpful also in postoperative intestinal atony and in all peritonitic conditions, particularly in cases of perforated appendix. In order to prevent dehydration in patients undergoing suction drainage fluids must be administered by the parenteral route (at least 3000 cc within twenty-four hours). To counteract the depletion of the chlorides physiologic solution of sodium chloride or Ringer's solution should be infused. In addition to this 5 per cent solution of dextrose should be given. In peritonitic conditions opiates should be prescribed in order to inhibit peristalsis. Hot compresses on the abdomen are advisable particularly in inflammatory conditions. The author says that recently suction drainage of several days duration has been recommended also in preparing patients with gastric ulcer or carcinoma for the operation.

Policlinico, Rome

43 1555-1590 (Aug 31) 1936 Practical Section

Adrenal Medullectomy in Syndromes Due to Hyperfunction of Adrenal Medulla L Durante.—p 1555

*Malarial Splenomegaly in Children Treatment by Maurino Acciari Method F Jerace.—p 1562

Malarial Splenomegaly in Children—Jerace of several satisfactory results from intravenous injections of from 0.01 to 0.1 mg of epinephrine in children ranging in age from 2 to 10

years, who were suffering from chronic malarial splenomegaly. The treatment is well tolerated by the patients. The volume of the spleen rapidly decreases and the crisis of the blood improves. The author believes that the method is indicated in chronic malaria and its sequels and also in acute malaria by combining the epinephrine injections with specific antimalarial drugs.

Archivos Argentinos de Pediatría, Buenos Aires

7: 429-504 (July) 1936

Frequency of Meningeal Forms in Acute Anterior Poliomyelitis. Their Importance in Diagnosis of Preparalytic Period. Epidemic in Buenos Aires. R. Cibils Aguirre and J. L. Araoz—p. 443

*Estrogen in Treatment of Gonorrheal Vulvovaginitis in Little Girls. F. Escardó and J. Salzman—p. 460

Clinical Picture of Acute Anterior Poliomyelitis in Infants. Epidemic in Buenos Aires. M. J. del Carril J. Vidal and B. Paz—p. 474

Roentgen Examination of Skeleton in Diagnosis of Congenital Syphilis in Infants. P. R. Cervini and G. A. Bogani—p. 480

Estrogen in Treatment of Gonorrheal Vulvovaginitis

—Escardó and Salzman review the literature on the development of endocrine therapy and consider the indications for administration of estrogen, the safety of the treatment and the doses, routes of administration and mechanism of action of estrogen in vaginal infections. They report the results of the treatment in gonorrheal vulvovaginitis in girls ranging in age from 2 to 10 years. The treatment was successful in seven of the eight patients treated. The authors conclude that gonorrheal vulvovaginitis in little girls is controlled by the beneficial effect of estrogen on the infantile vulvovaginal mucosa. The dose should be determined in each case by the reaction of the mucosa to the estrogen. The mucosal reaction is verified by making periodic bacteriologic and cytologic examinations of the mucosal tissues in vaginal smears. Oral administration is easier than that of other methods, but the results are good by either route. The general effect of estrogen on the organism of the patient seems to be harmless. The method is in the experimental phase. True conclusions as to its value and effects will result only from prolonged studies in a large number of cases. Gonorrheal vulvovaginitis in small girls has been resistant to the several treatments used in the past. The estrogen treatment seems promising.

Prensa Médica Argentina, Buenos Aires

23 1831-1884 (Aug 5) 1936

*Recurrent Benign Spontaneous Pneumothorax. M. R. Castex and E. S. Mazzei—p. 1831

H Units in Comparison with International r Units. E. L. Lanari and F. Vierheller—p. 1849

Castellani Spirochetosis with Esophageal Localization. Case. D. Boccia. R. Becco and C. Salvo—p. 1854

Roentgen Image of Pathologic Mastoid. M. Arce and F. Arce—p. 1858

Recurrent Benign Spontaneous Pneumothorax—Castex and Mazzei summarize the cases of recurrent benign spontaneous pneumothorax reported in the literature up to the present time and report three cases seen in their practice in a group of twenty cases of benign spontaneous pneumothorax. The condition develops with preference in young men. The symptoms are those of nonrecurrent benign spontaneous pneumothorax. It is the result of the tearing of so-called subpleural blebs, the rupture of which is caused by an exaggerated pressure during an effort. The subpleural blebs form themselves mechanically, at the level of the weaker or slightly altered areas of the lung, at the time of gaseous overdistention at that level. This interpretation is supported by the data given by the roentgen and anatomopathologic studies of the lung in this condition as well as by results of experiments. In all cases of benign spontaneous pneumothorax it is advisable to investigate, by means of the roentgen study of the lung, the presence of fine ring shadows at the contours of the visceral pleura which represent subpleural blebs located at that level. In the roentgenograms of the lung of one of the authors' patients, who was suffering from recurrent benign spontaneous pneumothorax, the shadows given by the subpleural blebs were evident in all the consecutive roentgenograms. The prognosis and treatment of the condition are the same as those of nonrecurrent benign spontaneous pneumothorax.

23 1885-1936 (Aug 12) 1936

Obstetrics Gynecology and Surgery. A. Peralta Ramos—p. 1885

Visceral Block from Thorium Dioxide in Roentgen Examination of Viscera. E. L. Lanari, M. E. Jorg and J. A. Aguirre—p. 1890

*Results of Specific Serotherapy in Multiple Sclerosis. J. E. Carulla and H. Zunino—p. 1896

Treatment of Gonorrheal Arthritis by Regional Vaccination. O. L. Gómez and F. Basch—p. 1900

Cavernous Sinus and Oculodental Venous Connections. L. E. Longinotti—p. 1905

Results of Specific Serotherapy in Multiple Sclerosis

—The treatment used by Carulla and Zunino consists in weekly subcutaneous injections of from 2 to 3 cc of hemolytic serum of rabbits previously immunized with the blood of the patients. The authors report results in three cases, in one of which the evolution of the disease has been controlled for more than three years. In this case the discontinuation of the treatment for three months, after a year and a half, resulted in recurrence of the disease, which was controlled by further treatment. The best results are obtained when the treatment is given early, before establishment of grave nervous lesions. It is advisable to give the treatment indefinitely, because its discontinuation generally results in recurrences.

Semana Médica, Buenos Aires

43 349-416 (Aug 6) 1936 Partial Index

New Micromethod for Evaluation of Carbon in Organic Compounds. J. A. Sánchez—p. 360

*Takata-Ara Reaction in Internal Diseases. D. Boccia and J. A. Gamalero—p. 365

Hematoma of Umbilical Cord. Case. D. Berdeal Avila—p. 368

Labor in Pulmonary Tuberculosis. Care and Conduction of Cases. Almeida Gouveia—p. 371

Pathogenesis of Tuberculosis. Mechanism of Action of Cod Liver Oil. L. L. Silva and R. Cárcamo—p. 373

Pregnancy at Full Term Late After Removal of Rectum in Rectal Cancer. Case. J. Leon and S. L. Sala—p. 386

Takata-Ara Reaction in Internal Diseases—Boccia and Gamalero used the Takata-Ara reaction in several internal diseases. The test gives positive results in all cases of atrophic cirrhosis and neurosyphilis and negative results in liver cirrhosis and several internal diseases of different nature. The results of the test are variable in pathologic processes of the biliary tract and in tuberculosis. In these conditions the test has neither a diagnostic nor a prognostic value. In cancer (whether or not developed in the liver) and in cachexia the results may be positive or negative. The technic of the Takata-Ara reaction is simple. Combined with other similar tests it can be of diagnostic value in certain internal diseases. However, it is not specific. Because of the small number of cases in which the authors have made the test, their article is a preliminary note and their conclusions are not definite, but they are still experimenting.

Folia Haematologica, Leipzig

55 161-304 (July) 1936 Partial Index

Experimental Studies on Gastrogenic Anemia. S. Petri, A. S. Ohlsen and D. Bøggild—p. 161

Cause of Distribution of Leukocytes in Blood Smear. Form of Nucleus of Polymorphonuclear Leukocytes. E. Schill—p. 175

*Blood Picture in Chronic Glomerular Nephritis and Genuine Contracted Kidney. B. Miske and W. Otto—p. 182

*Atypical Azurophilic Granulation in Megaloblasts. O. P. Jones—p. 195

Blood Picture of Human New Born with Especial Reference to Lymphocytes. H. Agress and H. Downey—p. 207

Clinical Investigations on Size of Erythrocytes and Its Significance for Dermatology. M. A. Schoch—p. 240

Blood Picture in Chronic Glomerular Nephritis—Miske and Otto direct attention to the unusually pale appearance of patients with glomerular nephritis. They observed an anemia in 44 per cent of the cases of chronic glomerular nephritis in which there was no essential disturbance in the renal function. The hemoglobin content was generally about 70 per cent. The number of erythrocytes was on the average around 373 millions. As the urea values increased, the anemia became more severe. The same relationship was discovered between the anemia and the rest nitrogen. The increase in the uric acid content of the blood usually preceded the changes in the other blood values and in the degree of anemia. Leukocytosis of a milder degree was observed in 54 per cent of these cases. In the cases of chronic glomerular nephritis that were accompanied by renal insufficiency, anemia had an incidence of

90 per cent. The hemoglobin content was as a rule around 56 per cent, the number of erythrocytes was 316 million and the average color index was 0.88. In these patients also an increase in the retention of the urea was accompanied by an exacerbation of the anemia. The highest uric acid values were found in uremia and in cases in which the hemoglobin values were around 50 per cent. The indican reaction became stronger as the anemia increased. The xanthoproteic test showed a behavior similar to that of the indican test. The leukocyte values were increased in 60 per cent of the cases and were never reduced. However, there was no relation between the number of leukocytes and the anemia. In genuine contracted kidney, the transitional cases showed increased hemoglobin and erythrocyte values. Patients with decompensated renal function showed anemia, the development of which was approximately parallel to the retention of the urinary substances. In the patients with anemia, the indican and xanthoproteic reactions were positive in 64 per cent whereas in those without anemia they were positive in only 21 per cent.

Atypical Azurophilic Granulation in Megaloblasts—Jones says that during the past several years he has been making an intensive study of the megaloblast normoblast problem. One of the facts that have been stressed constantly in morphologic hematology is that the first developmental stages of the hemoglobiniferous series are always devoid of any type of granulation. Apparently the appearance of granulation in the cytoplasm of hemoglobiniferous cells is rare or else it would have been described before. While this investigation was in progress, Segerdahl reported granulation in the cytoplasm of early megaloblast stages of pernicious anemia bone marrow. Since the author's observations do not coincide with those of Segerdahl and since there is considerable theoretical importance attached to the finding of granules in the cytoplasm of young hemoglobiniferous cells, he believes that an accurate description of the granules should be made and due consideration given to the bearing this observation has on theoretical hematology. He describes his observations and points out that Downey cannot agree with any of the proposed theories, since he finds that azurophilic granulation is not necessary for granulocytic development and maturation. He observed cases of myelogenous leukemia in which the granulocytes are developing from myeloblasts without any azurophilic granulation. The author's observations tend to support Downey's views concerning the significance of azurophilic granulation. Certainly the finding of azurophilic granulation in the early megaloblast stages dispels any concept that they represent a temporary differentiation of the stem cell along granulocytic lines. The presence of azure granules in prophilic and basophilic megaloblasts may be indicative of rapid proliferation and differentiation toward the hemoglobiniferous series, in which case the differentiation may have been so rapid that the azurophilic granules did not have time to disappear before reaching the promegaloblast stage. No such condition exists normally in the normoblastic series so that their presence must be interpreted as being atypical and pathologic. The collection of azure granule remnants into a juxtanuclear position may be similar to the pathologic alteration of azure granules in the form of Auer bodies. These granules do not appear in the megaloblasts in every case of pernicious anemia. It might be thought that they are due to technic. At any rate, regardless of the obscure mechanism which causes the rare occurrence of these granules in megaloblasts, the finding of azurophilic granules in the early forms of megaloblasts further substantiates the author's observation concerning the origin of the megaloblastic series from the myeloblast in pernicious anemia bone marrow during relapse.

Medizinische Klinik, Berlin

32 889 920 (July 3) 1936 Partial Index

- Cushing's Disease W. Berblinger—p. 889
- Influence of Vitamins A and C on Glycosuria in Diabetes Mellitus M. Roller—p. 898
- Percutaneous Arteriography as Therapeutic Method A. Beutel and O. Klein—p. 899
- Scarlet Fever and Angina F. Schlenker—p. 902

Influence of Vitamins A and C on Glycosuria—Roller studied the influence of vitamins A and C on the glycosuria of patients with diabetes mellitus. His observations on the regulatory effect exerted by these vitamins seem to explain the

favorable results that are obtained with certain empirically established diets of the preinsulin era. A reduction of the vitamin A vehicles, such as eggs, butter and cream, and of vegetables that contain vitamin A results in a reduction of the glycosuria or permits the intake of larger quantities of carbohydrate. Moreover, it is known that a diet containing large amounts of protein promotes the action of vitamin A, whereas a diet deficient in vitamin A furthers the development of A avitaminosis. Consequently the restriction of the protein content of the diet signifies a reduction in the vitamin A action, which in turn results in a lessening of the glycosuria. Thus not only the exclusion of the vitamin A vehicles but also a reduction in the proteins permits the intake of greater amounts of carbohydrate without increased glycosuria or insulin requirements. The glycosuria can be still further reduced if the diet provides generous amounts of vitamin C, or if vitamin C is given in the pure form.

Percutaneous Arteriography as Therapeutic Method—Technic—Beutel and Klein palpate with the finger below the inguinal fold the site of the most intense pulsation of the femoral artery and puncture here at an angle of 45 degrees with an injection needle. At first the injection needle is connected with an empty syringe, but after the arterial wall has been penetrated and the plunger of the empty syringe is moved by the arterial blood stream a 20 cc. injection syringe filled with the warmed contrast medium is attached to the needle. In order to be certain that the point of the needle is actually in the lumen of the artery, some blood is permitted to enter this second injection syringe. Then the entire quantity of the contrast medium is injected in from ten to fifteen seconds. Following the injection, a compression bandage is put on and a sand bag is placed on the site of the puncture. The patient continues to lie down for several hours, and after three or four hours he is usually able to get up again. In some patients as many as thirteen injections were made. The authors cite the history of a typical case and assert that in a number of other cases they obtained similar favorable results. They gained the impression that in some cases the injection treatment will permit a postponement or entirely prevent the amputation of an extremity. In discussing the action mechanism of this treatment, they suggest that the injected substance exerts not merely a mechanical but a pharmacodynamic action on the circulation and the blood perfusion of the vascular region in question. Capillaroscopy disclosed a considerable dilatation of the cutaneous capillaries, and the patients experienced a burning sensation of heat.

Münchener medizinische Wochenschrift, Munich

83: 1079 1118 (July 3) 1936 Partial Index

- Pleurisy During Childhood H. Vogt—p. 1079
- Epidemic of Psittacosis O. Beyreis—p. 1082
- Investigations on Pathologic Anatomic Development of Corrosive Esophagitis in Human Subjects Markow—p. 1085
- Unusual Injury of Middle Ear Hildmann—p. 1090

Pleurisy During Childhood—Vogt says that if the stasis transudates that occur in all age groups are disregarded there remain for the period of childhood only two types of pleural disorders, the serous and the suppurating pleuritis. Empyema develops chiefly during the first few years of life whereas serous pleurisy chiefly attacks children over 5 years of age. Both of these disorders are related to pneumonia. In nearly all cases of pneumonia that react to the pleura a serous exudate of the pleura develops. To be sure, these serous exudates that accompany practically every pneumonia are usually so slight that they escape detection by the usual methods of examination. Extensive serous exudates are the exception after pneumonia. The so-called idiopathic pleuritis has connections with tuberculosis for it has been observed that from 30 to 50 per cent of the patients who pass through a serous pleurisy succumb to a progressive tuberculosis within the following four years. However in children the danger is not so great as in adults. The author considers it justified to refer to idiopathic pleurisy as "paratuberculous" pleurisy but emphasizes that this term indicates only that the disorder develops on the basis of a tuberculosis and is not a tuberculosis of the pleura in the anatomical sense. In the treatment of serous pleurisy the question regarding the evacuation of the exudate by puncture is of vital importance.

tance. Evacuation becomes necessary as soon as the exudate becomes so extensive that it causes a displacement of the mediastinum with dyspnea and circulatory disturbances. Aside from this, it has not been proved that evacuation shortens the course of the disease. As long as there is still fever, the exudate usually reappears. Following subsidence of the fever, the exudate is usually rapidly absorbed without an intervention. The author warns against too early beginning of the respiratory exercises and too early getting up. The knowledge that serous pleurisy is not connected with pneumonia are often related to tuberculosis makes a careful supervision necessary even after the serous pleurisy has subsided. The author points out that occasionally empyemas of the pleura are observed in new-born infants or in older infants as a partial manifestation of a generalized sepsis or a metastasis of a suppurating inflammation in the abdomen. However, the greatest majority of the pleural empyemas develop in connection with pneumonia. The younger the child, the more often is the empyema a complication of pneumonia. Since lobar pneumonias reach the pleura more frequently, it is understandable that they are more often complicated by empyemas than are bronchopneumonias. Particularly in nurslings, the empyema is often masked by the simultaneously existing pneumonia, so that in some cases they fail to be recognized until necropsy. Empyema in young children has a high rate of mortality. Of course, it is often impossible to determine whether the empyema or the accompanying pneumonia caused the death. In discussing the treatment of empyemas the author says that the mortality rate has been reduced since it was realized that a resection of ribs or a wide opening of the pleural cavity must be avoided as long as the pneumonia has not completed its course. Avoiding the resection of the ribs during the first stage of the empyema is not identical with a failure to remove the pus from the thorax, for puncture as well as suction may be resorted to. In some cases these measures are adequate for a cure and at least bridge over the time during which resection of ribs would be dangerous.

Corrosive Esophagitis—Markow made careful observations on the development of corrosive esophagitis, beginning with the first few hours after poisoning with the caustic substance and continuing to the end of the first, second or fifth year. The material consisted of sixty cases. He describes the histologic aspects of acute and chronic corrosive esophagitis, the peculiarities of the reparative process and the macroscopic aspects. He stresses the great variety of the pathologic-anatomic aspects of corrosive esophagitis, not only in the different cases but also during the several stages in the same patient. He found that in many cases the corrosive changes of the esophagus are so superficial that they hardly require local treatment whereas in other cases they are so deep and extensive and the general intoxication is so severe that local treatment is only a useless torture for the patient. In still others the inflammatory process and the subsequent chronic ulcerations lead to such hard and extensive scars that no improvement can be expected from local treatment.

Zeitschrift für Krebsforschung, Berlin

44: 172 (June 18) 1936

Studies on Coagulation of Blood Serum of Healthy Persons and Animals and of Those with Tumors. B. Purjesz—p. 1

Statistics on Cancer in Bavaria During 1929. K. Leutheuser—p. 12

Studies on Hürzfeld's Reaction. III. Significance of Group Receptors and of Heterogenic Antigen for Outcome of Reaction. A. Zacho—p. 43

*Therapeutic Experiments with Vitamin A in Cancer. B. Lustig and H. Wachtel—p. 53

Sarcoma of Gallbladder. Case. A. Buttner—p. 59

Sarcomas of Heart. H. Rindt and H. Schwarz—p. 66

Therapeutic Experiments with Vitamin A in Cancer—Because their animal experiments had demonstrated that the growth inhibiting action of vitamin A becomes manifest only in epithelioma but not in sarcoma of mice Lustig and Wachtel limited their therapeutic experiments on human cancers to histologically verified epitheliomas. They used a vitamin A preparation which contains 40,000 biologic units in 1 cc. They apply the vitamin in the form of compresses and subcutaneous injections. If the vitamin is applied in the form of compresses it is used as an emulsion, which is obtained by mixing it with a colloidal copper preparation. In case of subcutaneous injections,

0.4 cc. of the copper colloid and the corresponding dose of vitamin are drawn into the syringe and, without mixing, are injected together. At first the authors treated superficial tumors (cutaneous epitheliomas and mammary carcinomas) applying the vitamin by means of compresses. Under the influence of this treatment the ulcerated surface becomes smaller, new epithelium grows in from the periphery, and the bottom of the ulcer becomes clear. These therapeutic effects were limited to the part of the tumor to which the treatment had been applied, the untreated portions remaining unchanged. Distant metastases likewise remained uninfluenced. But although the vitamin A compresses exerted a favorable effect, a complete cure of the cancerous ulcerations was not obtained until radium treatment was employed. Treatment with vitamin A was found especially helpful in cases in which a torpid ulcer remained after radium treatment. In subcutaneous administration of vitamin A, restriction to a certain dose is necessary in order to avoid the undesirable symptoms of hypervitaminosis. The threshold of tolerance for this mode of administration is between 100,000 and 120,000 biologic units. The authors begin with an injection of 40,000 units and twenty-four hours later inject another 20,000 units. If these injections produce an improvement a third injection of 20,000 units is made two days later. If this is followed by further betterment, an additional 20,000 units is given three days later. New series of injections should not be given until at least five or six weeks has elapsed. The authors conclude that, although vitamin A fails to effect complete cure of cancer its palliative action is sufficiently well established to justify its application as an adjuvant to other therapeutic methods.

Wiener klinische Wochenschrift, Vienna

49 1037 1060 (Aug 21) 1936 Partial Index

Pathology and Clinical Aspects of Auditory Disturbances in Cerebral Tumors. H. Brunner—p. 1037

*Question of Habit Breaking in Drug Addict. P. Weger and C. Amsler—p. 1040

Spreading and Prevention of Tuberculosis During Childhood. A. Götzl—p. 1041

*Experimental Investigations on Antithyroid Protective Substances of Blood. K. Fellinger and R. Pfeleger—p. 1044

Treatment of Intermittent Claudication with Aid of Bier's Suction Method. R. Stern—p. 1045

*Multiple Osteomyelitic Foci After Typhoid Epidural Abscess Resulting from Osteomyelitic Focus on Cranium. B. Chazkelson—p. 1047

Treatment in Drug Addiction—Weger and Amsler cite experimental evidence to the effect that in animals morphine addiction can be retarded by the administration of calcium and hastened by chronic intoxication with oxalic acid. They also determined that the breaking of the drug habit can usually be hastened by the administration of calcium. However, in view of occasional failures of calcium medication, it was thought that a deficiency in vitamin D might also play a part and so the authors decided to make further investigations. On the basis of their results, they again recommend the use of calcium in the treatment of drug addiction. They consider the intravenous injection of calcium gluconate the best mode of administration. They also advise supplementing this calcium therapy by measures that promote the vitamin D metabolism (phosphorus, cod liver oil and so on). It is suggested that, in the treatment of addiction to alcohol, calcium-vitamin therapy might likewise be helpful.

Experiments on Antithyroid Protective Substances—After citing earlier investigations on the antagonism between thyroxine and antithyroid substances, Fellinger and Pfeleger describe further experiments. They first determined that the administration of iodine to guinea-pigs stimulates the thyroid of these animals. Their further object was to determine whether this iodine action on the thyroid could be influenced by the antithyroid protective substance that they themselves had obtained from human blood by means of ether extraction. They found that the administration of this substance generally weakened or entirely prevented the activation of the thyroid by means of iodine. Tests on rats likewise revealed an influence of the antithyroid protective substances on the thyroid. The authors conclude that their experiments furnish further support for the assumption that the ether soluble antithyroid substances of the blood have an inhibiting effect on the thyroid. The question whether these substances act on the thyroid directly or by way

of its regulatory mechanism has not been answered as yet, however, the experiments indicate that the antithyroid protective substances influence not only the thyroid hormone but also the gland or its regulatory mechanism.

Multiple Osteomyelitic Foci After Typhoid—Chatzelson reports the clinical history of a girl, aged 20, who had abdominal typhoid that necessitated confinement to bed for five months. During this time the patient complained of intermittent pains in both legs. When she got up she complained of continuous severe pains in the lower third of the right leg where a swelling had developed. Roentgenoscopy disclosed several osteomyelitic foci along the tibia. An operation was performed and after that the patient felt improved. However, less than four months later the patient was again hospitalized on account of pain and swelling in the right temporal region. An osteomyelitic process of the frontal bone was thought of and roentgenoscopy corroborated this diagnosis. On the following day an operation was performed and it was found that the osteomyelitic process had caused an epidural abscess. The patient recovered. In order to prevent a renewed flare up of osteomyelitic foci, the author decided to try blood transfusion. The first transfusion caused extremely severe reactions and the patient had to undergo two other surgical interventions for the treatment of osteomyelitic foci. Then further blood transfusions were tried the reactions from them being milder each time. Whether these additional blood transfusions will prevent the flare up of other osteomyelitic processes cannot be stated as yet.

Polska Gazeta Lekarska, Lwów

15: 657 676 (Aug. 23) 1936

Gaucher's Disease. H. Kryszek and J. Fajlewicz—p. 657.
Cyanosis and Polyglobulism in Pulmonary Tuberculosis and Contemporaneous Disorders of Gaseous Exchange of Lungs and Tissues. A. Landau, A. Pruszczyński and B. Glass—p. 661.

*Differential Diagnostic Value of Symptoms During Course of Liver Diseases. A. Steinhardt—p. 664.

Hypertension from Point of View of Social Position. W. Łuczynski—p. 665.

Diagnostic Value of Symptoms in Liver Diseases—Steinhardt calls attention to the value of the symptoms of palate discoloration in the diagnosis of diseases of the liver. In the first stage the discoloration is oval and of about the size of a large bean on each side of the median line. In the second stage there is complete discoloration of both sides of the soft palate it being pale, dimly yellowish and diffuse. This color signifies a subacute condition of the disease. In the third stage the yellow is still darker and dimly reddish. These three stages point to a disease of the liver and associated organs such as the heart and lungs. In chronic diseases of the liver the symptom is not so important but in acute stages of any other disease the sudden appearance of this symptom is alarming. In a case of pneumonia, which progressed normally, the sudden appearance of palate symptoms made the author change the routine of treatment. The disappearance of the symptoms served as a sign that the patient was on the road to improvement. In short the appearance on the soft palate of the yellowish discoloration in three stages may serve as a warning symptom and have an important meaning for the differential diagnosis and prognosis.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

June 15, 1936 (No. 11) pp. 801-880. Partial Index.

*Parenteral Administration of Salt Solutions as Method of Nonspecific Therapy. K. I. Kotelnikov—p. 805.

Symptoms and Treatment of Disturbances of Coronary Vessels. Ya. Ya. Shpirt—p. 813.

Treatment of Scabies with Sodium Thiosulfate and Hydrochloric Acid. D. A. Lapshev—p. 820.

Sterilized Milk Bacillus Coli Culture Therapy of Dysentery. I. Kh. Chireykin—p. 826.

Heliotherapy with Calcium Iontophoresis as Curative Factor in Spa Treatment. L. D. Goldenberg and A. K. Bobkov—p. 829.

Blood Transfusion in Hemorrhages of Abdominal Typhus. A. T. Balmargya—p. 834.

Hemorrhages in Spotted Typhus Encephalitis. E. Ya. Latsinsk—p. 840.

Parenteral Administration of Salt Solutions—Kotelnikov injected subcutaneously from 1 to 2 cc of a weak solution of sodium chloride (from 1 to 2 per cent) in a number of patients suffering from both general and local manifestations. Particularly good results were obtained in acute and subacute

local disturbances, such as myositis, causalgia, radiculitis and the various neuralgias. In patients having polyarthritis, this treatment brought about a prompt diminution of pain, improvement in the movement of the involved joints, a better appetite and an improved general state. The author believes that the beneficial effect is due to the cumulative stimulation of the nervous system.

Finska Läkarsällskapets Handlingar, Helsingfors

79: 485 578 (June) 1935

Occurrence of Epidemic Hepatitis in Finland. J. Wickström—p. 485.

*Epidemiology of Epidemic Hepatitis. J. Wickström—p. 499.

Changed Physical Characteristics in Plasma Proteins in Nephrosis. M. C. Ehrström—p. 541.

Blood Sugar Curve in Water Tolerance Test. P. O. Buch—p. 557.

Epidemic Hepatitis—Wickström concludes that epidemic hepatitis is a specific infectious disease. From 1932 to 1935 it occurred in eastern Nyland with varying intensity, with a morbidity of up to 58.4 per cent. During the epidemic the contagion index was considerably increased, owing presumably to increase in virulence. Several cases in the same family were common. In some schools the morbidity rose to 43.2 per cent. The infection is thought to have been transferred mainly from person to person. The period of incubation is usually from three to five weeks. There are seasonal variations as in droplet infection, with maximum in December and February. Those who have had the disease apparently acquire immunity.

Ugeskrift for Læger, Copenhagen

98: 721 754 (Aug. 6) 1936

Constipation. Kramer Petersen—p. 721.

Springtime Tired Feeling. H. Tvedegaard—p. 723.

Ernst Loewenstein Problem. O. Thomsen—p. 724.

*Acute Myocarditis. H. Kjærgaard—p. 732.

Epinephrine Reaction in Hemolytic Jaundice and Other Forms of

Anemia. Together with Investigations on Changes in Blood Following

Splenectomy in Hemolytic Jaundice. A. B. Hansen—p. 739.

Anomaly of Ribs in Patient with Collapse of Lung After Hemorrhage.

H. Harpoth—p. 745.

Acute Myocarditis—Kjærgaard reports ten cases of acute myocarditis which did not originate as complications in inflammatory rheumatism, diphtheria or sepsis. In one of the six cases connected with ordinary croupous pneumonia, in a man aged 57, transient atrial flutter shown by electrocardiogram, was successfully treated with digitalis. In the second case, with perhaps more grave myocardial disturbance, treatment with digitalis was ineffective. In the next three cases of milder pneumonia, without arrhythmia the myocarditis was discovered on electrocardiography. In the sixth instance in a man aged 32 who died from bilateral croupous pneumonia, the electrocardiogram was normal but microscopic examination of the heart revealed acute myocarditis. In one of four cases of apparently primary myocarditis in patients ranging in age from 26 to 36 the myocarditis proved to be the first clinical sign of a rheumatic infection, in the second it was due to an overlooked typhoid together with later streptococcal infection and in the last two cases, both fatal, no cause other than general nonspecific infection was found in life or on necropsy. The author stresses the significance of electrocardiography in patients who have had even a slight infection and feel short of breath. He asserts that the postmortem establishment of acute myocarditis in spite of a normal electrocardiogram emphasizes the importance of a long period for convalescence after pneumonia and that an abnormal electrocardiogram in a convalescent always indicates rest in bed and a longer time for convalescing particularly if the patient does hard labor. The course of these acute myocarditides is always protracted even the milder cases requiring three months for recovery. Some cases now diagnosed as idiopathic hypertrophy are thought to depend on earlier acute myocarditis and most of the cases of chronic myocardial degeneration seen in younger persons to be the result of overlooked acute myocarditis. The prognosis is always doubtful. Since acute myocarditis may be the first sign of a specific rheumatic disorder careful subsequent treatment is advocated in all etiologically doubtful cases. Digitalis is generally believed to have only a slight or even a harmful effect in acute myocarditis. The success of treatment depends on early recognition, long rest in bed and careful control.

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HYPERSENSITIVENESS TO COLD

WITH LOCAL AND SYSTEMIC MANIFESTATIONS OF
A HISTAMINE-LIKE CHARACTER ITS AMEN-
ABILITY TO TREATMENT

BAYARD T HORTON, MD

GEORGE E BROWN MD

AND

GRACE M ROTH BS

Fellow in Physiology the Mayo Foundation

ROCHESTER, MINN

Danger lurks at the bathing beach for those who are hypersensitive to cold, but the danger can be eliminated by adequate desensitization. We do not pretend that, scientifically, this is the most interesting implication of the present report, we do believe that now, with summer almost at hand, it is the most immediately applicable feature of our work.

The study represents a clinical and experimental investigation of twenty-two cases seven of which have been previously reported, illustrating the various phases of hypersensitiveness to cold. This constitutes the entire group of such cases observed at the Mayo Clinic during the past ten years. The ages of these subjects ranged from 15 to 59 years. Eleven of the subjects were females and eleven were males. With few exceptions they appeared to be in good general health, some were even robust. One subject also had osteitis deformans¹ and one a hyperfunctioning adenomatous goiter with hyperthyroidism. Routine general examinations and laboratory tests gave essentially negative results. The Wassermann reaction of the blood was negative in each instance.

These patients exhibited abnormal local and systemic reactions following exposure to cold, and the systemic reactions were so striking as to constitute a clinical entity. Symptoms had been present for from one month to thirty years and consisted for the most part, of urticarial wheals over the face, neck and hands and occasionally over the feet, thighs and trunk. Urticarial manifestations invariably followed exposure to a cold wind, cold water or a cold environment. A number of the patients had swelling of the lips and one had dysphagia following ingestion of cold water or ice cream.

Of the twenty-two subjects, all manifested local reactions and fourteen in addition, had well developed systemic reactions. Eleven of these fourteen subjects had attacks of syncope following exposure to cold, and some of them were unconscious for more than two hours. No convulsions had been observed. Nine of

these eleven subjects had collapsed after swimming and four of them had had to be rescued from the water, two having been unconscious for more than an hour after being rescued.

Three of the eleven patients were particularly interesting. An attack of syncope was reproduced experimentally on one of them, a strong man aged 22, who was permitted to sit in a bath tub with the hands, legs and thighs immersed in water at 11 C (51.8 F) for four minutes. Shortly after leaving the room he collapsed. Three minutes later he recovered sufficiently to be able to walk. The second of the three patients, a man aged 52, had collapsed on the street while walking against a cold wind. The third, a healthy man aged 42, had partly walked and partly run a distance of four blocks against a cold wind, with the temperature at 30 degrees below zero, in order to catch a bus. He rode on the bus for a few blocks, got off and then walked about one block before going into a heated building. A few minutes after he entered the building his knees became weak and he collapsed, he was unconscious for about forty minutes. He vomited several times and was taken to a hospital, where he remained for a day. He did not recover his normal strength for about a week, and even then his stomach did not feel entirely normal. A year previously this patient had collapsed after swimming, but he had made a complete recovery from the systemic reaction in twenty-four hours.

These local and systemic reactions suggest those produced by injection of histamine or a histamine-like substance.¹ Our studies allow more than a speculative statement on the probable nature of these reactions. Physical agents such as cold probably permit the release of chemical substances from the tissue cells resulting from increased permeability. Histamine has been found in the normal skin of human beings, and Harris² has estimated the amount to be 10 mg per kilogram of tissue, the exact amount varying somewhat for the different regions of the body. Histamine is a normal constituent of liver, gastric mucosa and skeletal muscle and is probably a widely distributed³ constituent of all animal tissues. As a result of cold, it seems that histamine is released and that this, in addition to producing the usual urticarial changes locally, attains sufficient

1 Brown G E and Horton B T. A Clinical Syndrome Due to Cold with Local and General Systemic Reactions Suggesting Those Obtained by Histamine. Study II. Tr A Am Physicians 47: 353 357 1932.

2 Harris K E. Observations upon a Histamine-like Substance in Skin Extracts. Heart 14: 161 176 (Dec) 1927.

3 Lewis Thomas and Grant R T. Vascular Reactions of the Skin to Injury. Part II. The Liberation of a Histamine-like Substance in Injured Skin: the Underlying Cause of Factitious Urticaria and of Wheals Produced by Burning and Observations upon the Nervous Control of Certain Skin Reactions. Heart 11: 209 265 (May) 1924. Lewis Thomas and Harmer J M. Vascular Reactions of the Skin to Injury. Part IV. Further Evidence of the Release of a Histamine-like Substance from the Injured Skin. Ibid 14: 19 26 (April) 1927. Lewis Thomas and Love W S. Vascular Reactions of the Skin to Injury. III. Some Effects of Freezing of Cooling and of Warming. Ibid 13: 27 60 (Aug) 1926.

Dr Brown died, Nov 28 1935

From the Division of Medicine, the Mayo Clinic (Dr Brown).
Read before the Section on Pharmacology and Therapeutics at the
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Kansas City Mo. May 15 1936

concentration in the general circulation to produce reactions in every way comparable to those obtained when it is injected into the body

Local and systemic reactions were reproduced by immersion of the hand in water at 8 C for a period of six minutes (figs 1 and 2). The local effects on the skin consisted of pallor during the period of exposure, followed by redness, swelling and increased local temperature on removal of the hand or exposed part from the cold environment. After a latent period of from three to six minutes a characteristic systemic reaction developed, consisting of flushing of the face, a sharp fall in blood pressure, a rise in pulse rate, a tendency to or the actual development of syncope and transitory recovery in from ten to fifteen minutes. If a tourniquet was applied so as to cut off the venous return from the hand or the supply of arterial blood to the hand before the hand was immersed in the cold water, and if the tourniquet was kept on for an additional period after removal of the hand from the cold environment, the systemic reactions did not occur so long as the tourniquet remained around the arm (fig 3). When the tourniquet was then released the systemic reactions were more severe, frequently lasting three times as long as when the tourniquet was not used. The reaction occurred from one to two minutes after release of the tourniquet, whereas without the tourniquet in the average case the reaction occurred in from four to six minutes after removal of the extremity from the cold environment.

This observation is extremely important, for it seems to eliminate definitely a reflex basis for the systemic response. The procedure was repeated several different

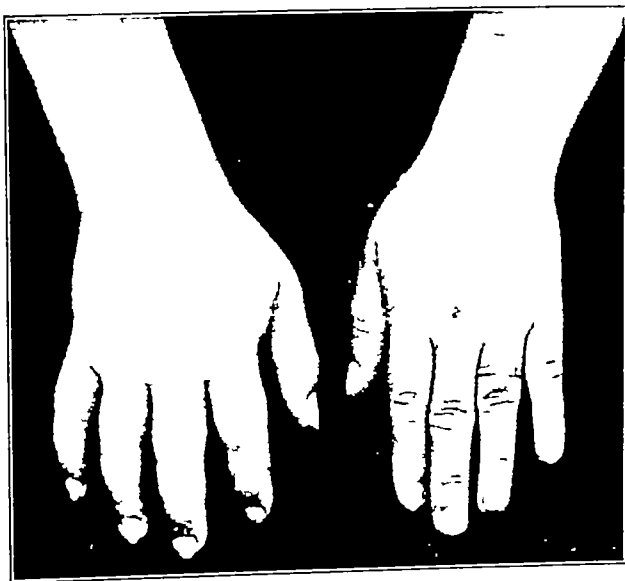


Fig 1—Appearance of the right hand of a woman aged 26 after it had been immersed in water at 8 C (46.4 F) for six minutes. The hand was markedly swollen and the patient was unable to close it.

times on five different subjects and with identical results. These observations have been confirmed by Harris, Lewis and Vaughan⁴ and by Bray.⁵ It suggests that

⁴ Harris K. E., Lewis Thomas and Vaughan Janet M. Haemoglobinuria and Urticaria from Cold Occurring Singly or in Combination. Observations Referring Especially to the Mechanism of Urticaria with Some Remarks upon Raynaud's Disease. *Heart* 14: 305-336 (March) 1929.

⁵ Bray G. W. A Case of Physical Allergy. A Localized and Generalized Allergic Type of Reaction to Cold. *J. Allergy* 3: 367-374 (May) 1932.

a chemical substance which caused a histamine-like reaction was produced in the skin following exposure to cold and that an accumulation of this substance in the hand in sufficient concentration, when suddenly released into the general circulation, produced a greatly exaggerated systemic reaction. Local swelling of the hand can be reproduced by the intra-arterial injection of

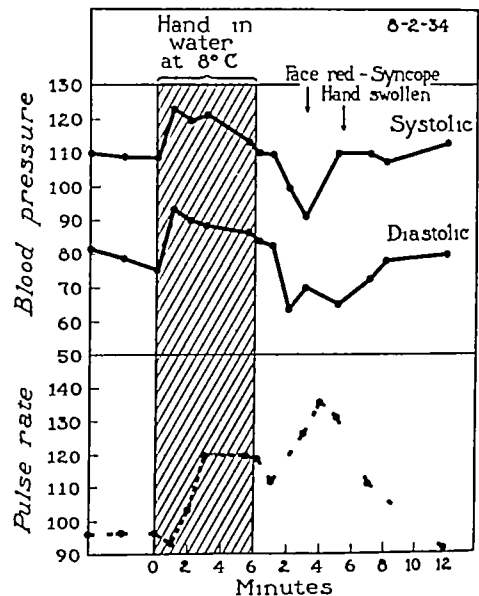


Fig 2 (same patient as in fig 1)—Histamine like systemic reaction following immersion of hand in water at 8 C. for six minutes.

from 0.1 to 0.15 mg of histamine, the swelling is distal to the point of injection. The systemic reaction can be accurately reproduced by the subcutaneous administration of 0.5 mg of histamine. Eustis⁶ was the first to produce urticaria experimentally by means of histamine.

Patients are unable to distinguish between the systemic manifestations produced by immersion of the hand in cold water and those produced by subcutaneous injection of histamine. Obviously it is not always possible to pursue an investigation to an end point when the subject investigated is a human being. On six subjects however, the exact clinical syndrome that followed immersion of the hand in cold water was reproduced by administration of known amounts of histamine. Changes in surface temperature were studied. In one case, that of a woman aged 45, a severe reaction was induced following immersion of the hand in cold water and at the height of the systemic reaction the temperature of the cheek was 34.4 C, an increase of 4.2 degrees C. Later in the same case the surface temperature of the cheek was 35.3 C, an increase of 3.9 degrees C following subcutaneous administration of 0.35 mg of histamine.

Electrocardiographic studies were carried out in two cases before, during and after the general reaction. At the height of the systemic reaction there was an inverted T wave in lead 3 which was absent during the period of control.

The response on the part of the gastric acids is interesting in attempting estimation of the quantity of histamine-like substances liberated from the skin and

⁶ Eustis Allan. Urticaria—An Experimental Lesson Produced by the Local Application of Beta Imidazole ethylamine. Its Relation to Intestinal Toxemia. *New Orleans M. & S. J.* 66: 30-735 (April) 1914.

⁷ Horton B. T., and Brown G. F. Histamine like Effect on Gastric Acidity Due to Cold. *Proc. Staff Meet. Mayo Clin.* 11: 11 (June 22) 1932.

subcutaneous tissues of the exposed part. We have not seen similar reports in the literature. In one case, that of a woman aged 59, before the hand was immersed in water at 96 C analysis of the gastric content disclosed no evidence of the presence of free hydrochloric acid and the total acidity was 20 when titrated with tenth normal solution of sodium hydroxide (fig 4). No change in gastric acids was observed while the hand was in water. When the gastric secretion was removed at the height of the systemic reaction, the value for free hydrochloric acid was 54 and the total acidity was 66. Similar values were observed one year later in the same case on repetition of the same procedure. After the patient had completely recovered from this systemic reaction the values for gastric acids were free hydrochloric acid, 0, total acidity, 38. After subcutaneous

although attempts to isolate histamine or a histamine-like substance from the blood stream at the height of the systemic reaction thus far have been unsuccessful. Moreover, we have not been able to isolate histamine from the blood stream at the height of the systemic reaction produced by subcutaneous administration of 1 mg of histamine.

TREATMENT

These patients are amenable to treatment. Systemic desensitization to cold can be accomplished by having the patient immerse a hand in water at 10 C for from one to two minutes twice a day for from three to four weeks. This, we believe, is sufficient to immunize the average subject, even patients who had swelling of the lips and tongue following the eating of ice cream, in addition to local swelling of the hands and face from

Hypersensitivity to Cold

Case	Age Years	Sex	Local Reaction		Systemic Reaction				Results
					Drop in Blood Pressure Flushing Face and so Forth	Syncope			
						Cold Weather	Swimming		
1	49	♀	2 to 3	Hands	+			Well	
2	22	♂	1/4	Body arms legs	+		+	Well	
3	15	♂	3	Face back arms	+		+	Well	
4	32	♀	6	Entire body	+		+	Died (alcoholism 6 years ago)	
5	57	♀	30	Thighs arms	+		+	Well	
6	30	♂	2	Entire body	+		+	Well	
7	26	♀	14	Hands lips	+		+	Well	
8	40	♂	4	Arms legs face neck trunk	+		+	Well	
9	40	♀	3	Hands feet	+			Well	
10	59	♀	20	Dysphagia	}				
			3	Urticaria—hands, face		+	+		'Much improved
			1	Bronchial constriction					
11	42	♂	1	Hands body tongue	+	+	+	Improved	
12	56	♂	1	Neck face hands	}				
			7	Ears					Well
13	20	♀	2	Hands face				Well	
14	10	♀	12	Arms body face legs	+	+	+	'Improved	
15	39	♂	1 1/2	Fingers ears				Well (spontaneous recovery)	
16	36	♂	3	Hands ears				Well	
17	36	♀	2	Toes hands face lips ears				Well (spontaneous recovery)	
18	57	♀	1	Hands	+			Well	
19	52	♂	15	Feet face hands	+	+		Well	
20	20	♂	10	Face hands				Seventy per cent improvement	
21	49	♂	5	Hands feet ears forehead				Well	
22	42	♀	4	Hands arms legs				'Ninety per cent improved	

* Rescued from the water

† Paradoxical reaction with hemoglobinuria

administration of 0.5 mg of histamine, without exposure to cold, the value for free hydrochloric acid was 18 and the total acidity was 48 (fig 5). In another case, that of a man aged 52, the value for free hydrochloric acid was 56 and the total acidity was 90 before the hand was immersed in cold water, at the height of the systemic reaction the value for free hydrochloric acid was 86 and for total acidity, 108. The response on the part of the gastric acids is of interest in estimating the quantity of histamine present. As is shown by our studies, greater quantities of gastric acids were obtained by the cold applications than by the administration of 0.5 mg of histamine.

Unfortunately, there are not available at present chemical methods of sufficient accuracy and sensitivity to allow the exact quantitative estimation of the histamine-like substance in the blood during these studies. Until the chemical demonstration has been made, it is impossible to determine the chemical nature of the substance that is responsible for this abnormal reaction to cold. The physiologic responses strongly suggest that the substance is similar to histamine,

exposure to a cold environment, have obtained complete relief by this method of treatment. Also, by daily immersion of the hand in cool water, starting at 65 F and decreasing in temperature to 45 F for increasing periods, excellent results have been obtained. Of the twenty-two patients we have studied sixteen are completely well and five are improved. The remaining patient (case 4 in the table) did not receive treatment. Patients also can be desensitized to cold by subcutaneous administration of 0.1 mg or less of histamine twice daily for from two to three weeks.

THE LITERATURE

We have been unable to find a review of the relevant literature in English. For the benefit of students of the subject we herewith furnish the results of our review. References to seven or eight articles of which we know, but which we have not been able to obtain for actual reading, are not included.

Urticaria attributable to cold has been recognized since 1866. At that time Bourdon⁸ reported the case

⁸ Bourdon. Note sur l'urticaire intermittente. Bull. et mem. Soc. méd. d'hop. de Paris 31:259-262, 1866.

of a woman, aged 44 apparently in good health, who suddenly, before breakfast, had a feeling of heat and swelling of the neck and complained of malaise and great anxiety. The involved skin was the site of whitened elevations accompanied by violent pruritus. Syncope developed. Under the influence of poultices to the lower extremities and administration of syrup of ether, the malaise and anxiety diminished while the urticaria and pruritus manifested themselves on the trunk and extremities. However, Bourdon stated that on the application of cold lotions to the affected parts at the request of the patient, the signs and symptoms recurred, including "half" syncope. He hurriedly stopped the refrigerating applications and from that moment the patient's symptoms disappeared. The entire clinical syndrome lasted approximately an hour. It is difficult from this description to know whether or not he was actually describing a case of cold allergy with systemic manifestations. Behier⁹ stated that he had been subject to urticaria induced by cold for a number of years and that if he stayed in cold water for too long a time syncope would result. However, he did not report data on an actual instance of syncope having affected him after bathing in cold water. Blachez¹⁰ in 1872 gave the first classic description of urticaria attributable to cold. He described the case of a woman aged 45, who had swelling of the face, hands, neck and feet following exposure to cold. In addition, on one occasion she noted severe burning pain along the course of the esophagus and in the throat following the swallowing of iced food. When the hands and feet were swollen she had marked difficulty in flex-

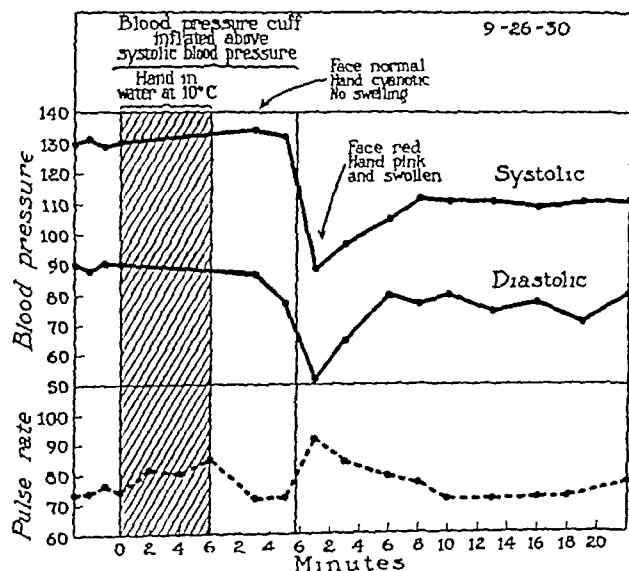


Fig. 3—Histamine-like systemic reaction in a woman aged 59 produced by immersion of the hand in water at 10°C (50°F) for six minutes. The blood pressure cuff around the arm was inflated to more than systolic blood pressure before the hand was immersed in water and was kept inflated for an additional five and one-half minutes after the hand was taken out of the water. Swelling of the hand did not occur during this period. One and a half minutes after the cuff was released there was a sharp drop in blood pressure and a rise in pulse rate with an unusually severe systemic response.

ing the fingers and could walk only with great effort. The clinical syndrome that he described lasted approximately thirty minutes.

Additional reports of single cases of urticaria attributable to cold with only local manifestations were

published in the next forty years by Münchmeyer,¹¹ Ungar,¹² Schutz,¹³ Ward,¹⁴ Fraser,¹⁵ and Hewlett.¹⁶

Netter¹⁷ in 1921 and Kleeberg¹⁸ and Wagner¹⁹ in 1922 also reported single cases. In the latter year Vidal, Abram and Lermoyez²⁰ reported the case of a healthy woman aged 37, who had urticaria on the face, neck and hands as well as on the entire body after taking a cold bath; these manifestations were fol-

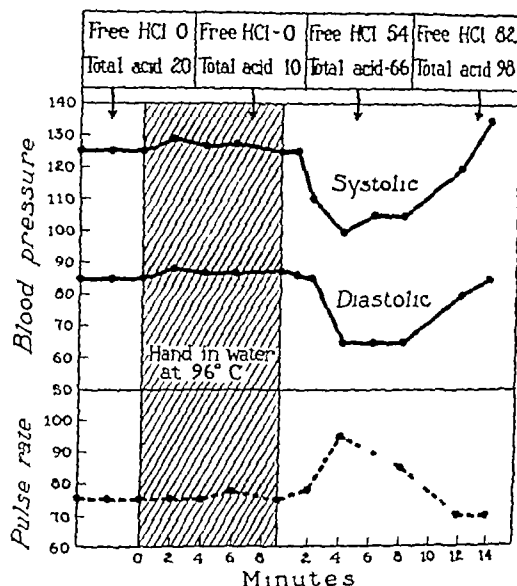


Fig. 4 (same patient as in fig. 3)—Histamine-like systemic reaction produced by immersion of hand in water at 96°C (49.3°F) for a period of nine minutes. Determinations of gastric acidity are shown and the usual drop in blood pressure and rise in pulse rate are illustrated.

lowed by general malaise which undoubtedly represented a mild, systemic reaction from undue exposure to cold. Duke in 1924 described the case of a physician, aged 43, who had complained of hives of five months' duration. The patient noticed that exposure of his face to cold wind would cause swelling of the tongue, cheeks, eyelids and ears with associated burning itching and redness of the skin, excessive lacrimation, itching of the eyes, sneezing and cough. The drinking of cold water caused pain in the mouth, throat, esophagus and stomach. On one occasion, when he had been exposed more than usual to cold he had a severe constitutional reaction which caused total collapse and required epinephrine for relief. No statement was made as to whether or not this followed swimming.

11 Münchmeyer E. Einiges über die Urticaria. Berl. klin. Wchnschr. 12: 268-272 (May 17) 1875.

12 Ungar V. Verhandlungen ärztlicher Gesellschaften. Berl. klin. Wchnschr. 12: 718 (Nov. 28) 1881.

13 Schutz Joseph. Mittheilungen über eine häufiger vorkommende Form von Urticaria chronica recidivata. München med. Wchnschr. 3: 802 (Aug. 20) 1895.

14 Ward S. B. Erythema and Urticaria with a Condition Resembling Angioneurotic Oedema Caused Only by Exposure to the Sun. Rays. New York M. J. 81: 742-743 (April 15) 1905.

15 Fraser T. R. Urticaria a frigore. Tr. Medico-Chir. Soc. Edinburgh. 25: 90-92 1906.

16 Hewlett A. W. Active Hyperemia Following Local Exposure to Cold. Arch. Int. Med. 11: 507-511 (May) 1913.

17 Netter M. Discussion Bull. et mem. Soc. med. d'hop. de Paris. 1: 339 (March 11) 1921.

18 Kleeberg. Kalteurtikaria. Berl. klin. Wchnschr. 58: 121 (Mar. 30) 1921.

19 Wagner Richard. Wind und Kalteurtikaria bei Lues hereditaria. Dermat. Wchnschr. 74: 489-491 (May 27) 1922.

20 Vidal Fernand, Abram Pierre and Lermoyez Jacques. Anémie et idiosyncrasie Presse med. 30: 189-193 (March 4) 1921.

21 Duke W. W. Urticaria Caused Specifically by the Action of Physical Agents (Light Cold Heat Freezing Burns Mechanical Irritation and Physical and Mental Exertion). J. A. M. A. 82: 32 (July 1924). Asthma Hay Fever Urticaria and Allied Manifestations of Allergy. St. Louis: C. V. Mosby Company 1923.

9 Behier in discussion on Bourdon's p. 262.
10 Blachez. Observation d'urticaire. Bull. et mem. Soc. med. d'hop. de Paris. 27: 271-272 1872.

In the next three years, additional cases of local reaction following exposure to cold were reported by Krakauer,²² by Podesta²³ (two cases) and by Freund²⁴ (three cases). Joltrain, Morat and Ley²⁵ in 1927 reported a case in which there was both a local and a systemic reaction. In 1927 one of us²⁶ reported two cases in which local and systemic symptoms of hypersensitivity to cold were exhibited by the patients. The systemic reactions were so striking as to constitute a clinical entity which was first fully described at that time.

One of these two subjects, apparently a healthy man aged 22, had first consulted us in November 1925. At that time he complained of tingling and burning sensations of the body when exposed to cold. These symptoms had been present for three months. His first attack of urticaria had developed after he had been swimming. He felt weak when he came out of the water and fainted on his way to the dressing room. We have not found in the literature an earlier report of syncope following swimming. Report of an additional case with a local reaction was given by Watrin²⁷ in 1927. In the same year Gougerot, Peyre, Moutet and Bourdillon²⁸ reported the case of a man, aged 39, who had both local and systemic manifestations following exposure to cold. Ravaut,²⁹ in discussing this report, stated that he had observed two subjects who had generalized urticaria following exposure to cold. Jadassohn and Schaaf³⁰ in 1928 reported the cases of a brother and sister on whom wheals formed following exposure to cold and in whom the urticaria was chiefly confined to the hands and face. Lehner³¹ in February 1929 reported a case concerning a man, aged 23, who was hypersensitive to cold and collapsed after being in swimming. He had to be rescued from the water. A little later the same year Harris, Lewis and Vaughan⁴ reported the case of a man, aged 64, who had had a definite systemic reaction earlier in life following swimming. Syncope, however, had not occurred. Five months later, in 1929, two of us³² reported four additional cases, the patients were a boy aged 15 years, a woman aged 32, a woman aged 57 and a man aged 30, all of whom had had unusually severe local and systemic reactions after being in swimming. Syncope had resulted in each instance and one of the subjects was unconscious for more than an hour. Another of the four subjects had to be rescued from the water. Additional reports of cases in the same year were made by Perutz, Brugel and Grünfeld³³ (two cases) and Pasteur

Vallery-Radot and Rouques³⁴ (two cases), in one of the latter two cases there was also a systemic reaction. Reports of single cases, with only local reactions, by Schmidt-Labaume³⁵ and by Haxthausen³⁶ appeared in the literature for 1930. Covisa and Prieto³⁷ reported one case in which there was a local reaction and an additional case in which both local and systemic reactions occurred.

Reports of single cases in which there were local manifestations were recorded in 1931 by Blackford³⁸ and by Pasteur Vallery-Radot and Blamoutier³⁹. Bray,⁵ about the same time, gave an unusually interesting report, with experimental data, concerning a boy aged 8 years who had local and systemic reactions. After the hand had been placed in water at a temperature of 45 F for five minutes and then taken out, the usual local reaction of swelling and redness occurred. Five minutes later, some linear wheals appeared, spreading up the arm from the thickened edge toward the axilla, along the lymphatics, which became raised, red, thickened cords. This is the first time that any observer

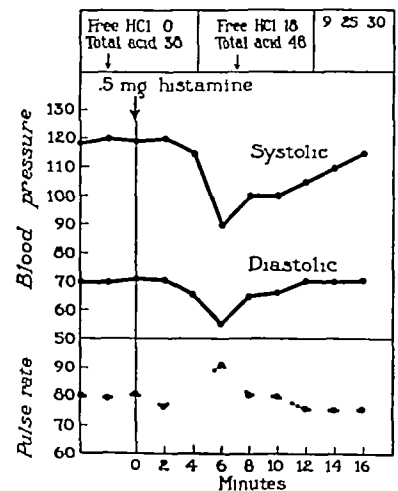


Fig 5 (same patient as in fig 3) — Changes in blood pressure, pulse rate and gastric acidity after the subcutaneous administration of 0.5 mg of histamine without exposure to cold.

reported involvement of the lymphatics in this manner following such an experiment. We observed the same phenomenon in one of our own cases. Bray was able to desensitize his patient by administration of histamine, after which the systemic reaction entirely disappeared and only a slight local reaction occurred following exposure to cold. Subcutaneous injections were given daily, the dose being increased from 0.1 mg of histamine to 0.9 mg by daily increases of 0.05 mg. The 0.9 mg dose was repeated on four consecutive days and the dose of 1 mg on five successive days. The total amount of histamine given was 16.2 mg in twenty-five injections over twenty-seven days. At the completion of this treatment, placing the hand in water at 45 F for five minutes was followed by a mild, local, urticarial reaction of the immersed part, but no general reaction was observed. Forty-five days later, when immersion of the hand was repeated in ice water for five minutes only, a mild local reaction was experienced, even slighter than that previously noted.

In 1932 additional cases in which marked systemic reactions and syncope occurred were reported by Bern-

22 Krakauer. Lupus erythematosus und Kalteurticaria. Zentralbl. f. Haut u. Geschlechtskr. 18: 754, 1926.
23 Podesta G B. Sull orticaria da freddo. Riforma med. 42: 1086-1088 (Nov 15) 1926.
24 Freund Ernst. Ueber Latenz und Spatreaktion nach Kälteschädigung. Ztschr. f. d. ges. phys. Therap. 32: 163-167, 1926-1927.
25 Joltrain E, Morat D and Ley Jacques. Urticaire géante observée chez un morphinomane à chaque tentative de sevrage. Étude biologique et thérapeutique du phénomène. Presse méd. 2: 1361-1363 (Nov 9) 1927.
26 Horton B T. Cold Allergy. Proc. Staff Meet. Mayo Clin. 2: 276-278 (Nov 23) 1927.
27 Watrin M J. Présentation de malades. Bull. Soc. franç. de dermat. et de syph. 34: 711-712 (July 8) 1927.
28 Gougerot Peyre, Moutet and Bourdillon. Urticaire par le froid. Bull. Soc. franç. de dermat. et de syph. 34: 321 (May) 1927.
29 Ravaut M. Discussion. Bull. Soc. franç. de dermat. et de syph. 34: 321 (May) 1927.
30 Jadassohn Werner and Schaaf Fritz. Kalteurticaria bei zwei Geschwistern. Dermat. Wchnschr. 86: 565-566 (April 28) 1928.
31 Lehner E. Kalteurticaria. Klin. Wchnschr. 3: 306-309 (Feb 12) 1929.
32 Horton B T and Brown C E. Systemic Histamine like Reactions in Allergy Due to Cold. A Report of Six Cases. Am. J. Sc. 178: 191-202 (Aug) 1929.
33 Perutz Alfred, Brugel Siegmund and Grünfeld Robert. Zur Pathogenese der Kalteurticaria. Klin. Wchnschr. 8: 1999-2002 (Oct 22) 1929.

34 Vallery Radot Pasteur and Rouques Lucien. Urticaire par le froid. Paris méd. 73: 365-370 (Oct 26) 1929.
35 Schmidt-Labaume. Urticaire pigmentosa und Kalte Urticaria. Zentralbl. f. Haut u. Geschlechtskr. 33: 536-537, 1930.
36 Haxthausen Holger. Cold in Relation to Skin Diseases. Copenhagen. Levin & Munksgaard 1930.
37 Covisa J S and Prieto J G. Contribucion al estudio de la urticaria al frio. Dermat. Wchnschr. 91: 1188-1192 (Aug 9) 1930.
38 Blackford L M. Cold Urticaria and Histamine Allergy. Report of a Case. J. A. M. A. 96: 525-526 (Feb 14) 1931.
39 Vallery Radot Pasteur and Blamoutier Pierre. Urticaire par le froid. Traitement par l'accoutumance. Bull. et mem. Soc. méd. d'hop. de Paris 2: 1907-1911 (Dec 11) 1931.

stein⁴⁰ (two cases), by Thannhauser,⁴¹ by Grassl⁴² (two cases), by Wilder,⁴³ by Urbach⁴⁴ (two cases) and by Klotz⁴⁵. In each instance syncope had followed swimming and three of the nine subjects had to be rescued from the water. In addition, Bernstein Klein⁴⁶ and Eiselberg⁴⁷ each reported two cases and Weiss⁴⁸ one case, in which reactions were only local.

Marquardt⁴⁹ in 1933 reported three cases in which there were only local reactions. Riehl and Resak⁵⁰ also reported one case of local and one of systemic reaction. Zum Busch,⁵¹ Benjamins⁵² (six cases, in five of which there were systemic reactions), Affolter⁵³ and Schlenker⁵⁴ all reported cases in which there were local as well as systemic reactions, in five instances syncope had occurred following swimming. One of the subjects had to be rescued from the water. Another patient collapsed in a physician's office.

Paul¹⁵ in 1934 reported one case in which there were local manifestations. One of us⁶⁰ also reported a case in this year in which local and systemic manifestations occurred. In this case syncope had developed after swimming. Dubbs⁵⁷ and Levine⁵⁸ each reported a case in 1935 in which there were local manifestations. Kobacker and Parkhurst⁵⁹ reported the cases of three sisters in whom hypersensitivity to cold developed following measles. They made spontaneous recovery.

SUMMARY

Of the twenty-two subjects in our series, fourteen had systemic reactions. Eleven of the fourteen subjects who had systemic reactions developed syncope, the syncope of nine of these eleven subjects occurred after swimming and four of the nine had to be rescued from the water. From the literature, we have gathered records of seventy-six cases of hypersensitivity to cold (not including seven of our own cases which have been reported previously). Twenty-nine of these subjects had systemic reactions and eighteen of the twenty-nine developed syncope, the syncope of fifteen of these eighteen subjects appeared after swimming. Four of these fifteen subjects had to be rescued from the water.

All together, this constitutes a series of twenty four cases of syncope following swimming. Eight of these subjects had to be rescued from the water, thus emphasizing our original statement that "Danger lurks at the bathing beach for those who are hypersensitive to cold."

ABSTRACT OF DISCUSSION

DR ISIDORE FINKELMAN, Chicago. Previous reports on this work were that there is a momentary rise of blood pressure as a result of immersing the hand in very cold water. I am doing some work along this line, immersing the patient's hands in cold water and occasionally immersing the whole body in cold water. What I am interested in is whether these patients mentioned by Dr Horton, who are hypersensitive to cold, have a lowering of blood pressure rather than a rise. I didn't clearly follow his remarks.

DR. CHAUNCEY D. LEAKE, San Francisco. Will the same type of reaction occur in the patients with the administration of acetylcholine? Further, is there any possibility that it may be linked with an enzymatic inhibition? Enzymes are sensitive to temperature changes. It is believed that acetylcholine is constantly being hydrolyzed in the body, so that a very high concentration is not present except under certain conditions. If its enzyme hydrolysis is inhibited, the concentration rises sufficiently to produce an effect. Similarly it may be that an enzyme factor may be involved in the presumed histamine effect.

DR. A. C. TENNEY, Chicago. The use of cold in ascertaining essential hypertension has been used a great deal in a diagnostic way. Is there any hookup between these observations and such cases of hypertension?

DR. MORRIS H. NATHANSON, Minneapolis. I should like to know whether Dr Horton was able to reproduce the typical histamine headache in his experiments. As regards the effects of choline, the systemic action seems to be considerably different from that of histamine. The salivation and lacrimation following a subcutaneous injection of acetylcholine are very marked. The gastric secretion is much less affected. It is probable that choline is more quickly destroyed than histamine. I have applied a tourniquet to an extremity and injected the choline compound below the tourniquet. When the tourniquet was released in about ten minutes the systemic reaction did not follow.

DR. BAYARD T. HORTON, Rochester, Minn. Regarding Dr Leake's question with reference to acetylcholine, I may say that our studies thus far do not indicate that acetylcholine plays any particular role in the production of the syndrome which I have just described. The stimulating influence of acetylcholine on gastric secretion is much less marked than that produced by histamine. Some subjects fail to display any alteration in gastric secretion on the administration of acetylcholine whereas a normal response in gastric secretion invariably follows the administration of histamine. Then too one cannot reproduce the general systemic symptoms in subjects who are hypersensitive to cold by the administration of acetylcholine, whereas patients have been unable to distinguish between the systemic manifestations produced by the subcutaneous injection of histamine and those produced by immersion of the hand in cold water. We have failed to isolate histamine or histamine-like substances from the blood stream at the height of the systemic reaction produced by exposure to cold although we have made repeated attempts to do so. Likewise we have been unable to demonstrate histamine in the blood stream after the administration of known amounts of that substance even when it has been given to the point of producing shock. We cannot therefore definitely say that this clinical syndrome is due to the liberation of histamine from the skin and other tissues following exposure to cold although we can reproduce every single phase of the syndrome, both local and general with the use of known amounts of histamine. This report should not be confused with the cold test for essential hypertension which was recently described by Dr E. A. Hines and the late Dr George E. Brown. Their test was an outgrowth of this study. For their test the hand is placed in ice water (4 C.) just above the wrist for a period of one minute. Readings of the blood pressure are taken at the end of thirty seconds and again at the end of sixty seconds. The maximal reading obtained will be the

- 40 Bernstein Fritz. Zur Frage des Badetodes. In discussion on Grassl's paper. *Munchen med Wchnschr* 2: 1889-1890 (Nov 18) 1912.
- 41 Zum allergischen Charakter der Kalteurtikaria. *Dermat. Ztschr* 64: 242-246 (Aug) 1932.
- 42 Thannhauser S. J. Zur Frage des Badetodes. *Munchen med Wchnschr* 2: 1890 (Nov 18) 1932.
- 43 Grassl. Zur Frage des Badetodes. *Munchen med Wchnschr* 2: 1469-1470 (Sept 9) 1932.
- 44 Wilder J. Kalteurtikaria mit schweren Allgemeinerscheinungen. *Wien klin Wchnschr* 45: 1458 (Nov 18) 1932.
- 45 Urbach E. Discussion. *Wien klin Wchnschr* 45: 1458-1459 (Nov 18) 1932.
- 46 Klotz Rudolf. Zur Frage des Badetodes. *Munchen med Wchnschr* 2: 1690-1691 (Oct 14) 1932.
- 47 Klein A. E. Zur Frage der durch Wärme und Kälte ausgelösten Urtikaria. *Dermat. Wchnschr* 95: 1741-1746 (Dec 3) 1932.
- 48 Eiselberg Karl. Discussion. *Munchen med Wchnschr* 2: 1691 (Oct 14) 1932.
- 49 Weiss Edward. Urticaria from Sensitivity to Cold. Recovery Following Removal of a Pelvic Tumor. *Arch. Dermat. & Syph* 25: 823-824 (May) 1932.
- 50 Marquardt F. Untersuchungen bei Kalteurtikaria und Urticaria factitia. *Dermat. Wchnschr* 96: 261-265 (Feb 25) 1933.
- 51 Riehl Gustav and Resak Erwin. Zur Pathogenese der Kalteurtikaria und ihrer Zusammenhänge mit der paroxysmalen Hämoglobinurie. *Ztschr f. klin. Med.* 124: 29-40 1933.
- 52 Zum Busch J. P. Ueber plötzlichen Tod im kalten Bade. *Deutsch. med Wchnschr* 59: 15 (Jan 6) 1933.
- 53 Benjamins C. E. Zes Gevallen van Koude-Allergie. *Nederl. tijdschr. geneesk.* 77: 4461-4469 (Sept 30) 1933.
- 54 Affolter Jean. Urticaire et syncope a frigore. *Schweiz. med Wchnschr* 63: 881-885 (Sept 9) 1933.
- 55 Schlenker Heinrich. Zur Behandlung der Kalte-Anaphylaxia. *Munchen med Wchnschr* 1: 974 (June 23) 1933.
- 56 Paul L. W. Cold Allergy. *J. A. M. A.* 103: 24 (July 7) 1934.
- 57 Horton B. T. Hypersensitivity to Cold. Local and Systemic Manifestations. *Proc. Staff Meet., Mayo Clin* 9: 477-480 (Aug 8) 1934.
- 58 Dubbs A. W. Urticaria Caused by Cold. *J. A. M. A.* 104: 116-117 (Jan 12) 1935.
- 59 Levine H. D. Urticaria Due to Sensitivity to Cold. Survey of the Literature and Report of a Case with Experimental Observations. *Arch. Int. Med.* 56: 498-510 (Sept) 1935.
- 60 Kobacker J. L. and Parkhurst H. J. Cold Urticaria Following Measles in Three Sisters. *J. A. M. A.* 105: 62 (Aug 31) 1935.

hand is in the ice water is taken as the index of the response. The changes in blood pressure occur promptly and are on a reflex vasomotor basis, whereas in our study of subjects hypersensitive to cold an interval of from three to six minutes elapses after the hand is removed from the cold water before a drop in blood pressure occurs. Furthermore, the tourniquet test, which prevents the return of blood from the exposed hand, definitely rules out a reflex basis for the changes in blood pressure and other systemic reactions which we have observed. Changes in blood pressure and systemic manifestations do not occur as long as the tourniquet is in place, however, they do occur promptly and in an exaggerated form when the tourniquet is released.

CHRONIC ENDEMIC DENTAL FLUOROSIS

(MOTTLED ENAMEL)

H TRENDLEY DEAN D D S

Dental Surgeon United States Public Health Service
WASHINGTON, D C.

The endemic hypoplasia of the permanent teeth known as chronic endemic dental fluorosis, or mottled enamel, is a water borne disease associated with the ingestion of toxic amounts of fluorides in the water used for cooking and drinking during the period of calcification of the affected teeth. The permanent teeth in particular are affected, although in areas of medium to marked severity the signs of mottled enamel are at times observable on certain of the deciduous teeth.

The causative factor of mottled enamel is operative during the period of tooth development. Hence the affected teeth erupt, showing the characteristic markings of the hypoplasia. Normally calcified teeth erupt showing a smooth, glossy, translucent structure, usually of a pale creamy white color. Teeth affected with mottled enamel, on the contrary, erupt showing a dull, chalky white appearance which in many instances later take on a characteristic brown stain, the frequency of brown stain increasing with age. In areas of marked severity, the surface of the teeth may in addition be marked by discrete or even confluent pitting. As the enamel forming organisms, the ameloblasts (gano-blasts), cease functioning at the time of the eruption of a tooth, mottled enamel is a permanent physical disfigurement. For purposes of classification, the various types¹ of the several degrees of severity have been divided into normal, questionable, very mild, mild, moderate, moderately severe, and severe.

References to this disease in the literature are comparatively recent, the first report being that of Eager² in 1901. The extensive investigations of McKay³ published in 1916 pointed unmistakably to mottled enamel being a water borne disease. Final proof of the validity of this hypothesis was furnished by McKay⁴ with the successful consummation of the Oakley (Idaho) experiment. Shortly after the publication of McKay's original report in 1916 the signifi-

cance of this endemic defect of the teeth as a health problem was inferred by Smith,⁵ who late in the same year called the attention of public health workers to the importance of mottled enamel as a hygienic question.

PREVALENCE

The distribution is world wide. In the United States there are about 335 endemic areas distributed among twenty-five states. Eighty-six per cent of these areas are located west of the Mississippi River, the most severely affected state being Texas.

In that portion of West Texas studied, a region about equal in square miles to the state of Pennsylvania, the causative factor of mottled enamel is operative over a vast district. A high percentage of the many thousands of children residing in this region during the period of calcification of the permanent teeth have developed, or are developing, mottled enamel. The ubiquity of the disease there is startling. Of the approximately 335 surveyed or reported endemic areas in the United States, ninety-four, or about 28 per cent, are found in Texas. Other states in which mottled enamel is known to constitute an important public health problem are Colorado, South Dakota and Arizona. East of the Allegheny Mountains a number of small communities located in the Atlantic coastal plain region of Virginia, North Carolina and South Carolina are affected.

Among the foreign countries the Argentine Republic is no doubt the most seriously affected, with about 175 endemic areas reported.⁶ Other countries where endemic areas have been recorded are England,⁷ Italy,⁸ North Africa (Morocco, Tunisia and Algiers),⁹ China¹⁰ and Japan.¹¹ Extensive studies are apparently being carried on at present in the Argentine Republic and North Africa. Other countries in which this problem has been the subject of investigation within the past few years are England, Italy and Japan.

ETIOLOGY

There is strong presumptive evidence that the causative factor of mottled enamel is the presence of toxic amounts of fluorine, present as a fluoride, in the water used for drinking and cooking during the period of calcification of the permanent teeth. The conclusions in 1931 of three independent investigations¹² pointed

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo. May 15, 1936.

1 (a) Dean H T. Classification of Mottled Enamel. *Diagnosis J Am Dent A* 21: 1421-1426 (Aug) 1934. (b) Dean H T, Dixon R M and Cohen C. Mottled Enamel in Texas. *Pub Health Rep* 50: 424-442 (March 29) 1935.

2 Eager J M. *Denti di Chiare* (Chiare Teeth). *Pub. Health Rep* 10: 2576-2577 (Nov 1) 1901.

3 McKay, F S in collaboration with Black G V. An Investigation of Mottled Teeth. *Dent Cosmos* 58: 477-484 (Mar) 627-644 (June) 781-792 (July) 894-904 (Aug) 1916.

4 McKay F S. Mottled Enamel. The Prevention of Its Further Production Through a Change of the Water Supply at Oakley Idaho. *J Am Dent A* 20: 1137-1149 (July) 1933.

5 Smith F C. Mottled Enamel and Brown Stain. *Pub Health Rep* 31: 2915-2918 (Oct. 20) 1916.

6 Chaneles Juan. Un problema odontológico de interés en la Argentina. La etiología de Los Dientes Veteados. *Rev odont (Buenos Aires)* 20: 64-73 (Feb) 1932. Munoz J M. El fluor del agua y las alteraciones dentarias en la Republica Argentina. *Rev Soc argent odont* 10: 43-54 (April) 1934. Erausquin R. Dientes veteados. *Rev odont (Buenos Aires)* (segunda comunicacion) 22: 314-325 (June) 1934. (tercera comunicacion) 22: 384-392 (July) 1934. (quinta comunicacion) 23: 296-313 (May) 1935.

7 Ainsworth, N J. (a) Mottled Teeth. *Brit Dent J* 55: 233-250 (Sept) 1933. disc pp 274-276. (b) The Clinical Significance of Traces of Fluorides in Water. *Analyst* 59: 380-385 (June) 1934.

8 Ricci E. Il fenomeno dei denti screziati in Italia. *Ann clin odont* 12: 1029-1043 (Dec) 1933.

9 Velu H. Le Darmous (ou Dermos). *Arch Inst Pasteur d'Algerie* 10: 41-118 (March) 1932.

10 Anderson B G and Stevenson P H. Occurrence of Mottled Enamel Among Chinese. *J Dent Research* 10: 233-238 (April) 1930.

11 Masaki T. Geographic Distribution of Mottled Teeth in Japan. *Shikwa Gakko* 36: October 1931. Nakano T. A Statistical Observation of the So-Called Endemic Affections of Tooth Structures. *Rinsho Shika* (English edition) 2: 102-103 (May/June) 1933.

12 Churchill H V. Discussion. Secretary's Report Div Water Sew and San Chem. *News Ed Indust & Engin Chem* 9: 105 (April 10) 1931. Occurrence of Fluorides in Some Waters of the United States. *Indust & Engin Chem* 23: 996-998 (Sept.) 1931. Smith M C. Defect of Human Teeth. University of Arizona College of Agriculture. *Agri Exper Stat technical bulletin* 32: June 10 1931. Velu H and Balozet L. Darmous (dystrophie dentaire) du mouton et solubilité du principe actif des phosphates naturels qui le provoque. *Bull Soc path exot* 24: 848-851 (Nov 12) 1931. Velu H. Dystrophie dentaire des Mammifères des zone phosphatées (darmous) et fluo ose chronique. *Comp rend, Soc de biol* 58: 750-752 (Nov 21) 1931.

to fluorine as the etiologic factor. A carefully controlled experiment¹³ in which municipal water was used from Conway, S. C., an endemic area, demonstrated that changes in the teeth of white rats given a concentrate of the Conway water were similar to those produced by water containing comparable amounts of sodium fluoride. The extensive survey about this time by Boissevain¹⁴ in Colorado added further evidence to support this theory. Further experiments at this laboratory indicated,¹⁵ at least with respect to white rats, that, while fluorine is the chief factor, other conditions possibly influence its action. There was a marked difference in the effect of a given quantity of sodium fluoride, depending on whether it was administered in the water or in the food.

Thorough surveys thus far made, though limited in number, have indicated that when an adequate number¹⁶ of children are examined in a community having the requisites for quantitative evaluation there is an orderly uniformity in the group response to the fluoride concentration of the communal water supply, with

among the adult population of an endemic area is at present undetermined. The work of Boissevain and Drea¹⁷ on human bones, taken in conjunction with the reports of various workers in comparative pathology,¹⁸ is at least suggestive of skeletal involvement. If so, the time factor must be extended to cover adults. Lemmon,¹⁹ a pediatrician of Amarillo, Texas, an endemic area, records that 'some of these babies have more tendency to bowing of the legs, even in the face of constant antirachitic therapy, thus supporting the theory that the toxic fluorides interfere with bone and dental metabolism.'

HISTOPATHOLOGY

The first report on the pathologic histology of this disease was that of Black²⁰ in 1916, who noted that the identifying characteristic was the absence of the cementing, or interprismatic substance, between the outer fourth and the outer third of the enamel rods. Black states that no injury to the enamel rod was observed and that the dentin was normal. In 1923 Williams²¹ confirmed the observations of Black respecting the absence or gross malformations of the interprismatic substance and added that in some instances the defective enamel structure extends to the dento-enamel junction. Black's opinion that the defect in mottled enamel was limited to the substance between the rods was based on examinations under the low and medium powers of the microscope and without the benefit of the silver nitrate staining technique as used by Williams. The latter, using a high resolving power of the 2 mm and 3 mm apochromatic objectives, found that the enamel rods were incompletely calcified. Imperfectly fused granules and small spherical bodies were frequently observed, the larger of these globular masses appearing to be identical with what are known as calcospherites. The histologic picture of mottled enamel disclosed no

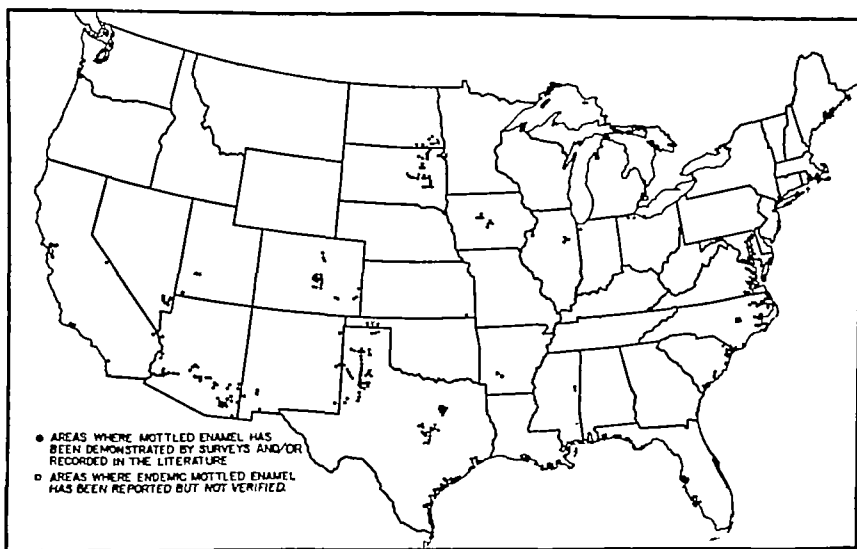


Fig. 1—Geographic distribution of mottled enamel in the United States in April 1936

regard both to the incidence and to the percentage distribution of severity, particularly the latter.

The minimal threshold of toxicity in drinking water has not yet been definitely established, but studies to date would suggest that amounts not exceeding one part per million, expressed in terms of fluorine (F), are of no public health significance.

PEOPLE AND TIME FACTOR

There is apparently no race, color or sex differentiation. In endemic areas—at least with respect to the permanent teeth—only those individuals are affected who have used a water containing toxic amounts of fluorides during the period of calcification of their permanent teeth. Whether or not there are other signs or symptoms of fluorosis as yet unobserved

essential difference from that of incompletely calcified forming enamel, or enamel showing the early stages of caries. In 1925 Beust²² called attention to the fact that, in addition to the enamel, the dentin was likewise affected, a condition which he termed mottled dentin. Black had stated that the dentin was normal while no reference to this tissue had been made by Williams. The observation of Beust with respect to dentinal disorder has been confirmed by Ainsworth,²³ who reported

13 Sebrell W. H., Dean H. T., Elvove Elias and Breaux R. P. Changes in the Teeth of White Rats Given Water from a Mottled Enamel Area Compared with Those Produced by Water Containing Sodium Fluoride. *Pub. Health Rep.* 48: 437-445 (April 28) 1933.

14 Boissevain C. H. The Presence of Fluorine in the Water Supply of Colorado and Its Relation to the Occurrence of Mottled Enamel. *Colorado Med.* 30: 142-148 (April) 1933.

15 Dean H. T., Sebrell W. H., Breaux R. P., and Elvove Elias. Effect of Various Amounts of Sodium Fluoride on the Teeth of White Rats. *Pub. Health Rep.* 49: 1075-1081 (Sept. 14) 1934.

16 Dean H. T. and Elvove Elias. Studies on the Minimal Threshold of the Dental Sign of Chronic Endemic Fluorosis (Mottled Enamel). *Pub. Health Rep.* 50: 1719-1729 (Dec. 6) 1935.

17 Boissevain C. H. and Drea W. F. Spectroscopic Determinations of Fluorine in Bones, Teeth and Other Organs in Relation to Fluorine in Drinking Water. *J. Dent. Research* 13: 495-500 (Dec.) 1933.

18 Cristiani H. La diminution de la resistance des os dans la cachexie fluorique. *Schweiz. med. Wchnschr.* 59: 63-64 (Jan. 19) 1929.

19 McClure F. J. and Mitchell H. H. The Effect of Fluorine on the Calcium Metabolism of Albino Rats and the Composition of the Bone. *J. Biol. Chem.* 90: 297-320 (Jan.) 1931.

20 Pachaly W. Ueber Veränderungen der Zähne und Kieferknochen bei experimenteller chronischer Fluorvergiftung. *Arch. f. exper. Path. u. Pharmacol.* 100: 114-193 (1923).

21 Sutor C. J. Changes in Teeth and Bone in Chronic Fluoride Poisoning. *Arch. Path.* 19: 159-173 (Feb.) 1933.

22 Lemmon J. R. Mottled Enamel of Teeth in Children. *Tex. State J. Med.* 30: 332-336 (Sept.) 1934.

23 Black G. V. in collaboration with McKay F. S. Mottled Teeth—An Endemic Developmental Imperfection of the Teeth Heretofore Unknown in the Literature of Dentistry. *Dent. Cosmos* 54: 111-116 (Feb.) 1916.

24 Williams J. L. Mottled Enamel and Other Studies of Dental and Pathological Conditions of this Tissue. *J. Dent. Research* 5: 111-116 (Sept.) 1923.

25 Beust T. B. A Contribution to the Fluorine of Mottled Enamel. *J. Am. Dent. A.* 12: 1059-1066 (Sept.) 1925.

imperfectly calcified dentin with interglobular spaces such as may be seen in any ordinary case of hypoplasia Ainsworth further notes that the pitting observed macroscopically on the surface of the enamel may be explained as a breaking off of the ends of enamel layers weakened by the loss of the inter-

residing in endemic areas, an observation which I have as yet been unable to confirm Ainsworth¹⁰ and Lemmon¹⁰ have also suggested that the deciduous teeth erupt somewhat later than usual

From observations that I made in areas of relatively high fluoride concentration (more than 4 parts per million of fluorine) there is sufficient evidence to suggest that there is an apparent tendency toward a higher incidence of gingivitis

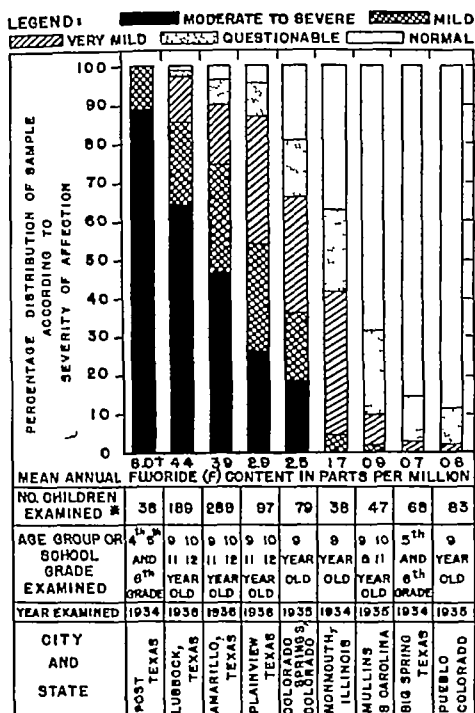
DOMESTIC ANIMALS

The production of an analogous pathologic condition under natural conditions in certain domestic animals has been reported in North Africa,⁹ the United States²⁵ and the Argentine Republic²³ This endemic hypoplasia particularly affects those domestic animals requiring several years for the calcification of their permanent teeth such as the horse the cow and the sheep In North Africa especially, this phase of the problem has been the subject of considerable investigation²⁶

INCIDENCE

The incidence in an endemic area may be high Among those children exposed to waters containing relatively high amounts of toxic fluorides during the first eight years of life, an incidence of from 80 to 90 per cent is not uncommonly observed In some instances it may reach 100 per cent Both the incidence and the percentage distribution of severity of the condition has been found to vary in relation to the fluoride concentration of the water For epidemiologic purposes and subsequent correlation with chemical and other studies, the determination of a community mottled enamel index is advisable These indexes which have previously been described^{1b} are negative, borderline, slight, medium, rather marked, marked, and very marked

The actual mottled enamel index of a community should not be computed unless there have been no physical changes in the set up of the water supply concomitant with the life period of the group examined For practical purposes, however, an approximate mottled enamel index may be developed if the interruptive variable in the water supply is such that it can be mathematically appraised The group of chil-



† SERIES OF MONTHLY SAMPLES NOT COMPLETED; PRELIMINARY ESTIMATION BY SENIOR CHEMIST E. ELVOYE, U.S.P.H.
* ALL CHILDREN EXAMINED STATED THEY WERE BORN IN THE COMMUNITY AND HAD USED MUNICIPAL WATER CONTINUOUSLY THROUGHOUT LIFE.

Fig. 2—Severity of mottled enamel in children of nine selected cities and the mean annual fluoride (F) content of the municipal water supply in 1933-1934. (All fluoride determinations were made by senior chemist Elias Elvove, United States Public Health Service and with the exception of those for Post Texas have been reported in two previous articles [Dean and Elvove footnotes 16 and 28]. For information concerning the history of each water supply seasonal variations or chemical methodology the reader is referred to these papers.)

prismatic substance. He adds that the layers of enamel formed between the striae of Retzius are broken off almost at right angles to the striae so that they show on the floor of the pits as a series of angular outcrops, giving in one section a definitely serrated appearance not unlike the pits in other forms of hypoplastic teeth. Erasquin²³ reports that the permeability of mottled enamel is comparable to that of immature normal (unrupted) enamel and enamel affected by caries. The permeable zone that characterizes mottled enamel is always the most external, its intensity diminishes from the outside inward.

RELATION TO OTHER ORAL PATHOLOGIC CHANGES

In spite of its defective structure, mottled enamel teeth according to McKay²⁴ exhibit no greater liability to caries than do normally calcified teeth; an inference apparently substantiated by the studies of Masaki,¹¹ Ainsworth¹⁰ and Erasquin²³. Masaki¹¹ and Ainsworth¹⁰ have likewise called attention to an apparent delay in the eruption of permanent teeth of children

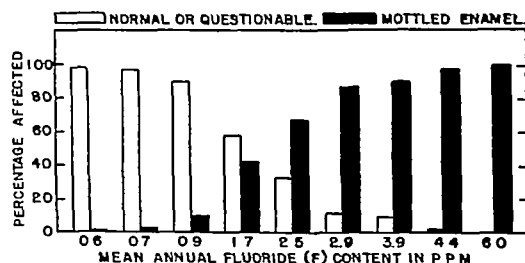


Fig. 3—Graphic summary of data in figure 2 showing quantitative relation of fluoride (F) concentration to clinical effect.

dren must consist of at least twenty-five individuals 9 years of age or older, whose time of risk of exposure has been constant, meaning that the children were born in the community, had lived there all their lives (short breaks in continuity totaling less than thirty days in any calendar year excepted) and had always used the

²³ Erasquin, R. Dientes veteados (cuarto comunicacion). Rev. odont. (Buenos Aires) 22: 430-441 (Aug.) 1934.

²⁴ McKay, F. S. The Establishment of a Definite Relation Between Enamel That Is Defective in Its Structure as Mottled Enamel and the Liability to Decay. II. Dent. Cosmos 71: 747-755 (Aug.) 1929.

²⁵ Dean, H. T. Mottled Enamel in Cattle. Pub. Health Rep. 50: 206-210 (Feb. 15) 1935.

²⁶ Velu, P. Darmous (fluorose chronique) et arret du developpement. Bull. Acad. vet. de France 7: 108-109 (March 1) 1934. Les phosphates Association française pour l'avancement des sciences (pp. 21-32) 58 E. Session Rabat 1934.

municipal or communal water supply both for cooking and for drinking. In cases in which the examination of the first twenty-five children discloses an incidence of less than 75 per cent, it has been found desirable, if not necessary, to increase the number in the group to fifty or more in order to compensate for fluctuations in sampling and their possible effect on the computation of the mottled enamel index.

The group examined should preferably consist of 9, 10, 11 and 12 year old children. Clinical observations limited to 9 year old children in areas in which the fluoride concentration of the water is less than 3 parts per million have a tendency to give a slightly lower incidence²⁷ than if the survey had embraced the four age groups mentioned.

QUANTITATIVE RELATION OF CONCENTRATION TO ACTION

In surveys made of cities having the requisites for quantitative evaluation²⁸ and even where these requisites are closely approximate, there is a definite quantitative relation between the fluoride concentration and the clinical effect. Although a prognosis with respect to any one individual is obviously unwarranted, it is felt that a prognosis relative to the group response to waters of varying fluoride concentration may be tentatively made at this time. From the continuous use of water containing about 1 part per million, it is probable that the very mildest forms of mottled enamel may develop in about 10 per cent of the group. In waters containing 1.7 or 1.8 parts per million, the incidence may be expected to rise to 40 or 50 per cent, although the percentage distribution of severity would be largely of the "very mild" and "mild" types. At 2.5 parts per million an incidence of about 75 to 80 per cent might be expected, with possibly 20 to 25 per cent of all cases falling into the "moderate" or a severer type. A scattering few may show the "moderately severe" type.

At 4 parts per million the incidence is, in general, in the neighborhood of 90 per cent, and as a rule 35 per cent or more of the children are generally classified as "moderate" or worse. In concentrations of 6 parts per million or higher an incidence of 100 per

cent is not unusual. In other words, we are dealing with a low grade chronic fluorine poisoning of children and the action on the group roughly follows the general pharmacologic observations of Shackell,²⁹ respecting the quantitative relation of concentration to effect.

PREVENTION

In the light of present knowledge, this disease is readily preventable. The logical approach to the solution of this problem is, of course, avoiding the use of water containing fluorides in excess of the permissible limit. In some instances this can be accomplished by simply changing to a readily available source in the same neighborhood that is free of toxic amounts of fluorides. Examples of this are the towns of Oakley, Idaho, previously referred to,⁴ and Baunite, Ark.,³⁰ which abandoned its deep wells and turned to the nearby Saline River as the source of its water supply.

Where such changes are not entirely feasible, it may be possible in some cases, especially where the water contains less than 2 parts per million, to dilute an otherwise satisfactory water supply with another water that will bring the final fluoride content down within the permissible limits. And while these changes are being made, it is well to bear in mind that the only portion of the population known to need protection is the group of children between birth and 8 years of age, inclusive. For this group it is possible in many cases to provide distilled or cistern water for drinking and cooking purposes during the susceptible period, the first eight years of life.

Finally, in those areas in which a satisfactory water is not available, the ultimate solution in such cases would have to depend on a suitable method, economically feasible, of treating the existing water supply by chemical means for the removal of toxic amounts of fluorides.

National Institute of Health

ABSTRACT OF DISCUSSION

DR. CARL F. JORDAN, Des Moines, Iowa. In 1933, after completing a nation-wide survey, Dr. Dean reported 125 localities in this country representing endemic areas giving rise to mottled enamel. He now reports a total of 335 endemic areas with distribution in twenty-five states. In 1932 a dentist, Carl T. Ostrem, was first to report mottled enamel in Iowa affecting school children at Ankeny, near Des Moines. A state wide survey was begun in 1933 by the Iowa State Department of Health. To date fourteen areas of mottled teeth have been discovered. Iowa is fortunate in that the endemic areas listed at this time affect no cities with a population over 2,000. The chief method of prevention of mottled enamel lies in securing a water supply free from fluorine. Changing the water supply offers difficulties in a community using deep well water containing fluorine where there is no convenient access to another water supply free from this element. On the other hand if the change can readily be made, failure to do so should constitute negligence on the part of officials. Baunite, Ark., and Oakley, Idaho are striking examples of towns which have changed their water supplies and where children are now free from the mottled enamel defect. Further steps are needed to overcome the apathy of officials in certain communities toward this unfortunate dental defect. First hand observation of the moderately severe form of mottling with the associated brown

27 Two related factors are probably the cause of this somewhat lower incidence in a survey limited to the 9 year old group. First in endemic areas of relatively low fluoride concentration (less than 2 parts per million) there is in a fair proportion of the children of comparable and constant residence and water history a tendency to show the milder forms of mottled enamel only on the bicuspid and second molar—a group of teeth which according to Kronfeld (*Development and Calcification of the Human Deciduous and Permanent Dentition*, The Bur, March 1935) begin their calcification at a somewhat later date than the incisor first molar group. This manifestation of mild dental fluorosis in teeth calcified at a later date is suggestive of a cumulative action of fluorine. Second based on an analysis of the 162 schedules of the Colorado Springs-Pueblo survey¹¹ only about 1 per cent of the permanent second molars, 7.2 per cent of the second bicuspid and 20.5 per cent of the first bicuspid were erupted in the 9 year age group. It follows therefore that certain 9 year old children are necessarily classified as normal on the basis of the absence of mottled enamel on the incisor first molar group when, if the same individual were examined a year or two later, it might show objective signs of mottled enamel on the bicuspid second molar group and be so classified. Adjusting for this minus variation for instance in a survey of a community like Colorado Springs where the mean annual fluoride content of the city water is 2.5 parts per million of fluorine, an examination of 9, 10, 11 and 12 year old children would probably result in raising the incidence from 67 per cent for the 9 year old group exclusively to a general rate of about 75 to 80 per cent if the sample consisted of the four age groups mentioned. Because the percentage distribution of severity in the 9 year group examined in this city is so near that of the next higher index, it is probable that, in this instance, the community mottled enamel index would be raised from slight to "medium." In areas where the fluoride content of the water is between 1.5 and 2 parts per million it is unlikely that this difference would have any effect other than a slight increase in the incidence. In areas of relatively high concentrations the effects of this variation would of course be negligible.

28 Dean H. T. and Elvove Elias. Some Epidemiological Aspects of Chronic Endemic Dental Fluorosis. *Am. J. Pub. Health* 26: 567-575 (June) 1936.

29 Shackell L. F., Williamson Wayne, Deitchman M. M., Karsa G. M. and Kleinman, B. S. The Relation of Dosage to Effect. *J. Pharmacol. & Exper. Therap.* 24: 53-65 (Aug.) 1934. Shackell L. F. The Relation of Dosage to Effect. *ibid.* 25: 275-288 (May) 1935.
30 Kempf, G. A., and McKay F. S. Mottled Enamel in a Series of Population. *Pub. Health Rep.* 45: 2923-2940 (Nov. 28) 1930.

stains, in children whose teeth are otherwise perfect in form and arrangement, will do much to dispel indifference. Dr Dean referred to the recent work of J. R. Lemmon, a pediatrician in Texas, who reported defective development of the long bones in babies whose diet includes water with fluorides in toxic amount. Further clinical studies might well be carried out by physicians to demonstrate harmful effects apart from the enamel dystrophy. Such work would supplement noteworthy contributions that have already been made by Dr Dean and others and would promote measures designed to prevent mottled enamel of the teeth.

DR. STANLEY H. OSBORN, Hartford, Conn. I should like to ask Dr Dean if there are any other conditions in the body that thus affects, such as endocrine disorders or difficulties.

DR. L. D. BRISTOL, New York. I should like to ask whether there is any correlation between mottling of the enamel and what might be called mottling of the skin as a result of this type of water. The tale is frequently heard that these so-called liver spots on the skin are nothing but a mottling due to certain types of alkaline water.

DR. H. T. DEAN, Washington, D. C. There are several articles in the literature suggesting a possible relation between fluorine and the endocrines. First there is the report of Goldemberg, who attempted to show a relationship between fluorine and endemic goiter; this work, of course, is not generally accepted. With respect, however, to the parathyroids, several investigations are of interest. In 1911 Erdheim reported the effect of parathyroidectomy on rats. The structural defects in the incisor teeth of the parathyroidectomized animals were apparently similar to the defects now associated with experimental fluorosis. With this as a basis, a group at the University of Wisconsin a few years ago attempted to determine whether there were demonstrable changes in the parathyroids of rats affected with fluorosis. The experimental group was fed a relatively high fluoride concentration but the gross and histopathologic examination failed to show any consistent significant changes. There is a considerable literature suggesting possible skeletal involvement. Cristiani working with guinea pigs found that the fragility of the bones was increased about 20 per cent in the fluorized animals. Sutro has recently reported in the *Archives of Pathology* definite osseous changes—an osteosclerosis, in rats fed fluorides over a period of time. The experiments which I have just cited were of course on experimental animals. The work, however, of Boissevain and Drea at Colorado Springs is of particular interest because they were dealing with human material. These workers found that bones of residents of Colorado Springs or Cripple Creek contain about six times as much fluorine as that found in the 'control' bones, which were from New York City and Washington, D. C. The biochemical observations in this study were confirmed by spectroscopic examination. Regarding the question asked by Dr Bristol, there are two references in the literature that may be pertinent. Black in 1916 stated that he thought the defect was more pronounced in children predisposed to freckling. Lemmon in a recent article in the *Texas State Journal of Medicine* states that mottled enamel occurs more frequently in blonds and 'redheads.' However, I know of no definite correlation on this point. The suggestion of Dr Jordan is well taken, namely that the possibilities of untoward effects of fluorine on the skeletal system of inhabitants of endemic areas should be thoroughly explored. An excerpt from a paper by Velu published in the *Bulletin of the Academy of Medicine* at Paris a few years ago is particularly relevant. Referring to 'le darmous,' the name by which this disease is known in North Africa, Velu referred to the condition as 'the fluorine sign of the inapparent intoxication.' The question of legal liability has arisen in connection with common water supplies containing toxic amounts of fluorides. There is a report that in one endemic area two damage suits have been filed against the municipality. It is a new phase of the problem and in several states health officers, sanitary engineers and city officials are giving this new development serious consideration.

Vitamin C in Staple Foods—Fruits, vegetables and milk are the practically important sources of vitamin C among our staple foods.—Sherman, H. C. *Food and Health*. New York, Macmillan Company, 1934.

THE THERAPEUTIC USE OF HELIUM

ALVAN L. BARACH, M.D.
NEW YORK

The basis for the proposal of helium as a gas for therapeutic use in certain types of dyspnea occurring in clinical disease depends wholly on its decreased specific gravity in relation to nitrogen.¹ Since the weight of a comparable volume of nitrogen is seven times greater than that of helium, a mixture of 21 per cent oxygen and 79 per cent helium may be substituted for 21 per cent oxygen and 79 per cent nitrogen, namely air, thus providing a respirable gas mixture which has one-third the density of air. During quiet breathing the influence of such a decrease in weight is practically negligible. The physical law which provides that the force required to move an object is proportional to the weight of the object does not, however, indicate that one-third the effort employed in breathing air would suffice for the inhalation of the helium-oxygen mixture. The pressure maintained in the tubal system of the respiratory tract in quiet breathing is so small that no significant change in intratracheal or intrapleural pressure was observed in animals as a result of the substitution of the lighter gas mixture. When inspiration has once been initiated, the passage into the lungs of either air or a helium-oxygen mixture is consciously almost effortless, expiration is completely so.

However, when there is an obstruction in any part of the respiratory tubal system, an increased negative pressure within the chest becomes necessary for the inward movement of air past the obstruction, and there exists in the passageway between the lung and the site of obstruction a marked increase in pressure of the atmosphere being transported. During violent dyspnea without obstruction, in which large volumes of air are moved in and out of the lungs at a high velocity, the smaller elements in the respiratory tubal system act as a relative constriction, and here too the air is under increased pressure. The function of a helium-oxygen mixture may now be explained by the physical formula. The velocity of movement of a gas through small orifices is proportional to the square root of the density of the gas. The pressure required for the movement of an 80 per cent helium-20 per cent oxygen mixture would be almost one-half that required for air. In human subjects who breathed through narrow orifices, an actual reduction as high as 50 per cent was found in the pressure of a helium-oxygen atmosphere as compared to air.² Since pure oxygen is slightly heavier than air, approximately the same reduction in physical force takes place when the helium-oxygen mixture is substituted for 100 per cent oxygen. Furthermore, in experimental respiratory obstruction in animals and in a patient in severe asthma, a reduction in intrapleural negative pressure was found when the helium-oxygen

From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

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Owing to lack of space a table summarizing the clinical data on eighteen patients with asthma treated by inhalation of helium with oxygen has been omitted here. This table together with an unabridged text will appear in the author's reprints.

The author is indebted to the United States Public Health Service and the Bureau of Medicine and Surgery, United States Navy for a grant of helium* to the National Research Council for assistance and to the Linde Air Products Company for active support.

¹ Barach, A. L. Use of Helium as a New Therapeutic Gas. *Proc. Soc. Exper. Biol. & Med.* 32: 462 (Dec.) 1934.

² Barach, A. L. Use of Helium as a Therapeutic Gas. *Anesth. & Analg.* 14: 210 (Sept.) 1935.

mixture was substituted for air.³ This saving in respiratory effort has been made use of in patients with severe asthma or obstructive lesions in the larynx, trachea and bronchi.⁴ In this report the principles and clinical application of the therapeutic use of helium in a larger series of cases will be described.

HISTORICAL

Helium was isolated from the mineral cleavite by Ramsay⁵ in 1895. It was later found to be a constituent of the air to the extent of one part in 200,000. It is now obtained from certain natural gases and is used in dirigibles because of its buoyancy, having replaced hydrogen because it is free from explosive possibilities. In 1923 Cooke⁶ called attention to the fact that helium had a coefficient of solubility half that of nitrogen and a diffusibility twice as great. Sayers and Yant⁷ in 1926 showed that animals could be decompressed from ten atmospheres of helium-oxygen mixture in one-third the time necessary for a nitrogen-oxygen mixture. Elihu Thompson⁸ in 1927 called attention to correspondence with the U. S. Bureau of Mines in which he suggested the use of helium for divers in 1919.

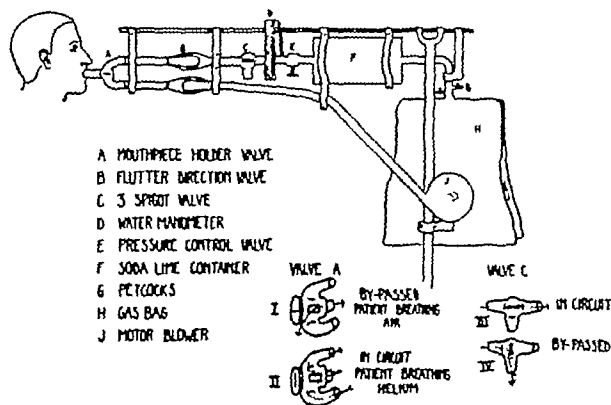


Fig. 1—Helium pressure rebreathing apparatus

Hershey⁹ reported that animals could not survive in atmospheres in which the rare gases were excluded. However, I¹⁰ carefully tested this hypothesis and showed that animals were apparently uninfluenced in atmospheres in which all the rare gases were excluded for as long as forty-two days. Furthermore, animals (mice) were kept in completely sealed chambers in which there was 21 per cent oxygen and 79 per cent helium for periods as long as two months without obvious change in their general condition. These investigations confirmed in my mind previous evidence of the biologic inertness of the rare gases and helium specifically, the conception of helium as a vehicle for oxygen then took place, based on its physical property of possessing the lowest specific gravity of any of the elements except hydrogen, the highly explosive nature of which forbade its clinical use.

3 Barach A. L. Effects of the Inhalation of Helium Mixed with Oxygen on the Mechanics of Respiration. *J. Clin. Investigation* 15: 47 (Jan.) 1936.

4 Barach A. L. Use of Helium in the Treatment of Asthma and Obstructive Lesions in the Larynx and Trachea. *Ann. Int. Med.* 9: 739 (Dec.) 1934.

5 Ramsay Sir William. The Gases of the Atmosphere. ed. J. London: Macmillan Company, 1905.

6 Cooke C. U. S. Patent Office. 1923. patent 1,733,337.

7 Sayers R. K. and Yant W. P. Value of Helium-Oxygen Atmosphere in Diving and Caesarian Operation. *Anesth. & Analg.* 5: 127 (June) 1926.

8 Thompson Elihu. *Correspondence Science* 65: 36 (Jan. 14) 1927.

9 Hershey J. W. Physiologic Effects of Atmospheres Diluted by Nitrogen. *Trans. Acad. Sc.* 32: 51 1929.

10 Barach A. L. Rare Gases Not Essential to Life. *Science* 80: 593 (Dec.) 1934.

METHODS

The administration of helium presented difficulties not encountered in the therapeutic use of oxygen. In order to obtain satisfactory results it was found highly necessary that nitrogen should be rigidly excluded because of the fact that a leakage of air into the apparatus markedly increased the weight of the mixture and thereby interfered with the specific function of helium. Furthermore, it is important that helium be not haphazardly administered lest an excessive concentration of helium inadvertently result in asphyxia. Since my first clinical communication,⁴ mixtures of from 20 to 25 per cent oxygen with from 75 to 80 per cent helium have been made in a single tank which protects against an undue lowering of the oxygen concentration, provided an adequate flow of the combined gas is continuously administered.

Two general methods have been developed, which are subject to various modifications. For relatively short periods of administration, such as from one-half hour to three hours, a closed circuit rebreathing apparatus has been used with a mouthpiece or a mask. This has been found practicable in adult patients with asthma. The mouthpiece is the same as that used in basal metabolism apparatus; a nose clip is required to exclude air from the nose. The mask is very light and is kept in place by two elastic straps around the head. The closed circuit apparatus contains a motor blower unit which has been specially reconditioned to make it leak tight, one-inch inlet and outlet tubing which connects with a Douglas (or other rebreathing bag) and a soda lime canister. Inserted in the exhalation tubing is a two-way valve which may allow a flow through it or be turned so that the expired air passes into the atmosphere. There is a variable orifice steam valve and a water manometer distal to it, also introduced in the exhalation tubing. The steam valve may be turned so as to produce a resistance in the circuit and thereby increase the pressure in the system, the degree of which is read by a manometer distal to it.

When treatment is begun the rebreathing bag is filled from the tank containing the combined mixture (from 20 to 25 per cent oxygen, the remainder helium). The first filling is washed out by turning to the atmosphere the two-way valve on the exhalation side of the circuit. When the bag has again been filled with the desired mixture the patient is attached to the apparatus through either a mouthpiece or a mask, and the first eight or ten breaths are allowed to be exhaled into the atmosphere through the two-way valve in order that the nitrogen in the lungs may not dilute the helium-oxygen atmosphere. During this period it is desirable to continue to let the mixture run into the apparatus at a rate of approximately 15 liters per minute, in order to maintain a positive pressure until the motor blower unit has been turned on. After the patient's lungs have thus been washed out the two-way valve is turned into the circuit and the motor blower unit turned on. The steam valve is adjusted so that a pressure of 1 or 2 cm. of water is recorded. The gage on the helium-oxygen tank is then lowered to 4 liters per minute. (An oxygen gage can be used but would have to be recalibrated since a higher flow of the helium-oxygen mixture would be admitted at a given reading, a flow gage, a rota-regulator or a calibrated water bottle could be used.) It would be possible after the mixture has been obtained in the rebreathing bag and the patient connected to the apparatus simply to add the oxygen consumption of the patient, entirely reusing the helium.

and making frequent tests of the oxygen concentration in the circuit. However in actual practice it has been found both more convenient and more effective to deliver from 4 to 5 liters of the oxygen-helium mixture continuously during the treatment which accomplishes a partial reusing of helium insures a constant supply of oxygen and tends to maintain the proper helium concentration which inadvertent leaks might otherwise impair. If 4 liters per minute of 25 per cent oxygen and 75 per cent helium is administered to an adult patient his own oxygen consumption will usually lower the concentration in the mixture to between 22 and 23 per cent, the relatively smaller oxygen consumption in infants will but slightly lower the oxygen concentration of the mixture admitted. When the treatment is about to be terminated the valve at the mouthpiece is turned toward air before the patient is disconnected in order not to suck air into the apparatus.

A basal metabolism apparatus could be adapted for helium administration the excess helium-oxygen gas being allowed to bubble out of the water in the spirometer. However a positive pressure is necessary in this method even if it is only from 0.5 to 4 cm. in order that the patient may not be compelled to inhale against the resistance in the circuit. This may be done by inserting a motor blower unit of sufficient capacity or by putting a weight on the spirometer bell. A water manometer may be led from the exhalation side of the circuit and fastened by adhesive plaster to the spirometer.¹¹

The oxygen tent has been employed with certain modifications although maintaining strictly hygienic atmospheric conditions previously described.¹² Helium-proof fabric is used. The motor blower unit is especially reconditioned so that no leaks occur. For infants a tent has been used in which the entire body is enclosed. For adults it is more practicable simply to enclose the head and to make a closure at the neck. The Benedict¹³ helmet respiration apparatus may be used for this purpose or any variety of hood that takes in only the head and neck. Even for infants this type of apparatus seems now preferable to the body tent. When the patient is placed in the tent pure oxygen is admitted at high speed from a needle valve until a test of over 98 per cent oxygen is obtained in the enclosed atmosphere. The tank containing the mixture of 25 per cent oxygen and 75 per cent helium is then turned on at a flow of from 20 to 30 liters per minute until a concentration of 25 per cent oxygen is obtained in the tent. For infants from 2 to 3 liters a minute of the mixture is then admitted for adults from 4 to 6 liters

TREATMENT OF ASTHMA

In the previous clinical communication³ inhalation of helium with oxygen was found beneficial for (1) the patient in status asthmaticus in whom severe asthma became continuous and in whom there was complete refractoriness to epinephrine and all other measures, (2) for cases of severe asthma with partial refractoriness to epinephrine in which epinephrine must be employed five or more times daily to keep the patient

in even moderate comfort. These two groups merge into each other being characterized by the loss of sensitivity to epinephrine. In severe asthma it is a common clinical experience to observe that the patient requires more and more epinephrine to control his asthma and that with the use of increasing amounts of epinephrine a refractory state develops in which only temporary and incomplete bronchiolar dilatation results from its use. Maytum Prickman and Boothby¹⁴ confirmed our results in status asthmaticus, reporting three cases that were promptly relieved, both objectively and subjectively by the inhalation of helium with oxygen after all other measures had been tried and found unavailing. In their opinion these patients looked as if a fatal outcome might otherwise have taken place. In five patients of the present group of eighteen the severity of the asthmatic state was such as to lend weight to the fear that death might momentarily occur.

The mechanism of improvement of status asthmaticus is based on the decreased respiratory effort required for pulmonary ventilation when a helium-oxygen mixture is breathed. Within a few minutes some degree of relief is obtained, although it may be a matter of from two to eight hours before the bronchial spasm is relieved. It appears to be a clinical fact that the early period of relief obtained by the respiratory system as a whole of itself initiates bronchial dilatation. After improvement has become manifest through the inhalation of helium with oxygen the patient promptly recovers some degree of sensitiveness to epinephrine. In some instances even after relatively short periods of administration, such as from two to five hours, the patient becomes completely sensitive to epinephrine and requires no further helium treatment. In other cases periodic inhalations are necessary for from two to five days before complete restoration of epinephrine sensitivity is produced.

In patients who have not progressed to a condition as severe as status asthmaticus but who suffer more or less continued wheezing throughout the day or night with frequent acute paroxysms, the inhalation of helium-oxygen mixtures initiates a variable degree of relief depending on the severity of the bronchial constriction. This may be roughly estimated as between 80 and 100 per cent for what might be termed chronic wheezing and between 50 and 80 per cent for more severe bronchial spasm. In these patients the administration of helium with oxygen through a mask or mouthpiece rebreathing apparatus is employed for most of the time during the day when more or less continuous asthma is present. In some patients sufficient relief will be obtained by breathing the gas under atmospheric pressure, in most a slight positive pressure such as between 0.5 and 4.0 cm. of water pressure, is desirable. The increased pressure facilitates the entrance of the gas into the lungs and thus decreases the negative pressure existing within the chest. We have shown in one patient with asthma a decrease of from -11 to -7 cm. intrapleural negative pressure induced by the inhalation of 20 per cent oxygen and 80 per cent helium under 5 cm. positive pressure.¹⁵

In animals breathing through a narrowed orifice, the decrease of the negative intrapleural pressure, breathing a helium-oxygen mixture under positive pressure, has been graphically recorded (fig. 2). As seen in this record a decrease from minus 12 cm. of water to

¹¹ The rebreathing apparatus with mask and mouthpiece may be obtained from the Oxygen Therapy Service Company, New York. Other manufacturers of equipment used are the Mine Rescue Appliance Company, Pittsburgh which makes the masks and the densimeter, Warren E. Collins, Boston who manufactures the Benedict Helmet Respiration Apparatus, the Forreger Company, New York which calibrates water bottles for separate introduction of helium and oxygen, John Emerson, Cambridge, Mass. who makes an infant tent.

¹² Barach, A. L. New Oxygen Tent. *J. A. M. A.* 87: 1213 (Oct. 9) 1976. Importance of Ventilation in Oxygen Tent and Oxygen Chamber Therapy. *New York State J. Med.* 31: 1263 (Oct. 15) 1931.

¹³ Benedict, F. G. A Helmet for Use in Clinical Studies of Gaseous Metabolism. *New England J. Med.* 203: 150 (July 24) 1930.

¹⁴ Maytum, C. K., Prickman, L. E., and Boothby, W. M. Use of Helium and Oxygen in the Treatment of Severe Intractable Asthma. *Proc. Staff Meet. Mayo Clin.* 10: 785 (Dec. 11) 1935.

¹⁵ The author is indebted to Dr. Richmond Moore for his help in obtaining these observations.

minus 7.9 cm occurred during inspiration, and from minus 3.4 cm to minus 0.9 cm in expiration. The presence of continued increased negative pressure within the chest causes an accumulation of blood within the lungs, promotes exudation of serum into the alveolar spaces and retards the filling of the left side of the heart. In animals, edema of the lungs has been produced by subjecting the animal to respiration against a negative pressure of from 3 to 4 cm of water, whereas breathing against a positive pressure of similar degree does not cause these pulmonary changes.¹⁶ These results are comparable to those of Moore and Binger,¹⁷ who reported pulmonary congestion and edema in animals that inspired through a narrow orifice but found no such changes in animals that expired against a resistance. The lungs of dogs in my experiments inhaling either against resistance or against a negative pressure showed not only massive pulmonary congestion and edema but also areas of emphysema. The production of obstructive emphysema, therefore, seems to me to be more related to the effect of a high

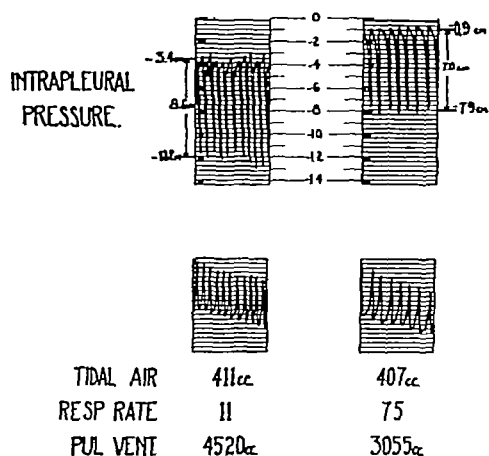


Fig. 2.—Intrapleural pressure and tidal air in dog breathing through three-sixteenths inch orifice.

1 Air at atmospheric pressure. 2 Air at 5.5 cm of water pressure.

The effect of positive pressure is to reduce the negative pressure within the chest during inspiration and expiration and also the total range of pressure.

intranegative pressure within the chest rather than to any backward distending pressure on the alveolar walls, a view also supported by Prinzmetal.¹⁸

In patients suffering from status asthmaticus, I have observed that the volume of the pulse either is greatly diminished or disappears at the end of inspiration, even in patients with moderately severe asthma the systolic blood pressure drops precipitately at the end of inspiration. I have thought this was due to incomplete filling of the left heart because of the high negative or suction pressure existing within the chest. In one patient in a severe asthmatic state I found an intrapleural negative pressure of minus 20 cm of water. High readings have also been reported by Prinzmetal¹⁸ and others. The physiologic advantage of the administration of helium with oxygen may in part be explained by its effect in lowering the intrapleural negative pressure. By adding a positive pressure in the apparatus, a still further lowering of the negative chest pressure is obtained.

There is, however, a further factor to be considered, namely, that an excessive positive pressure within the chest also decreases the filling of the left side of the heart, with a parallel fall in the systolic blood pressure. Pressures between 5 and 10 cm of water have therefore been given for short periods such as one half hour, and the volume of the pulse and the blood pressure observed during its administration. If the pulse volume is noticeably decreased or the systolic blood pressure falls more than 20 mm of mercury a smaller positive pressure is employed, such as from 1 to 3 cm of water. The higher pressures have been used in patients with tremendous dyspnea, whose state suggested high intrapleural negative pressures, and the lower pressures in the exhausted comatose patient who presented a picture of imminent respiratory failure, in whom high negative pressures within the chest could be assumed to be absent because of the shallow respiration. Conscious patients vary in their subjective response to increased pressure. They are aware of the increased ease of inspiration and the increased muscular effort during expiration. In some, preference is expressed for increased pressure, for example, from 1 to 5 cm, in others, minimal pressures of from 0.5 to 1 cm are found more agreeable.

The history of the following case illustrates the use of helium in the two groups that have been discussed, namely, the state of more or less chronic wheezing, in which the bronchodilating effect of epinephrine was slight and temporary, and the acute severe condition of status asthmaticus in which the patient was comatose, pulseless and gravely ill, with complete refractoriness to epinephrine.

A woman, aged 54, had suffered intermittently from asthma for twenty years. Her allergic work-ups had always been negative. The relation of her asthma to infection had been suspected but never proved. For two months before she entered the hospital she had had more or less continuous wheezing at home with acute paroxysms as well. Epinephrine gave but slight transient relief. She had been in an oxygen tent for two weeks and had morphine intermittently. Her pulse became steadily faster and ran at an average rate of 140, at times 150. She was brought to the hospital in an ambulance. At the time of admission she was seen to be exhausted, dyspneic, orthopneic and cyanotic with sibilant rales heard throughout the lungs. She obtained complete subjective relief with a disappearance of all rales during the inhalation of helium 80 per cent, oxygen 20 per cent, with from 0.5 to 3 cm. of water pressure. She was treated for periods of one half to one hour at a time. During the intervals between treatment in the first two days the wheezing returned as soon as she was disconnected from the apparatus. On the second day she had an acute paroxysm, which was treated with 1 cc. of epinephrine. The attack was relieved but wheezing persisted afterward. At the end of five days she was free from all chronic wheezing. The onset of a mild paroxysm was controlled by 0.5 cc. of epinephrine and two days later by 50 mg. of ephedrine. Three weeks later, when the patient was getting up and about attacks of asthma recurred, for which the patient took epinephrine. It is noteworthy that she preferred epinephrine when it was effective, to helium, as the relief secured in an acute paroxysm by the inhalation of helium is at best only partial and does not do away with the spasm. Inhalations of helium were not therefore recommended since the patient responded to epinephrine. Formerly when the patient's respiratory reserve had become exhausted by continuous asthma the special function of helium was applicable.

In the course of the subsequent work up of the patient during the period when she had been taking from 2 to 3 cc. of epinephrine daily an intracutaneous skin test of tuberculin coccus vaccine was made. She showed within ten minutes a reddened area about the size of a quarter (24 mm.) at the site of the test. On the following day a cellulitis of the forearm extending to the lower third of the arm was present.

¹⁶ Data to be published.
¹⁷ Moore R. L. and Binger C. A. L. Observations on Resistance to the Flow of Blood to and from the Lungs. *J. Exper. Med.* 45: 655 (April) 1927. The Response to Respiratory Resistance. A Comparison of the Effects Produced by Partial Obstruction in the Inspiratory and Expiratory Phases of Respiration. *ibid.* 45: 1065 (June) 1927.
¹⁸ Prinzmetal Myron. Relation of Inspiratory Distention of the Lungs to Emphysema. *J. Allergy* 3: 493 (July) 1934.

This subsided two days later, during the night the patient went into status asthmaticus, was treated by repeated doses of epinephrine and morphine and in the morning was unconscious, unable to be aroused, breathing in shallow but labored fashion, with the pulse almost imperceptible. She was treated with inhalations of 20 per cent oxygen and 80 per cent helium with a mask and mouthpiece at from 1 to 2 cm of pressure, alpha-lobeline, 25 mg, was given to counteract the effect of morphine, 75 cc. of 50 per cent dextrose was given intravenously to increase the pulse (and circulation) volume, and 0.8 Gm of caffeine with sodium benzoate. At the end of two and a half hours the patient was free from asthma except for a slight wheeze, she was conscious, and the pulse was of good quality. In patients with status asthmaticus, morphine is at times a dangerous drug, as the effort to breathe against the severe bronchial spasm may be diminished without at the same time altering the degree of bronchiolar constriction thereby promoting a dangerous degree of asphyxia. In this instance the patient regained her sensitiveness to epinephrine and to ephedrine in two days and required helium on only one day subsequently, when a continuous wheeze was present. She was subsequently given high dilutions of staphylococcus vaccine and a mixed vaccine and discharged from the hospital with only slight wheezing at night, which was controlled with ephedrine. Follow up five months later has shown steady improvement.

Five of the eighteen patients at one or more of their admissions to the hospital presented a picture of status asthmaticus of such severity as to suggest a fatal outcome. They had become completely unresponsive to epinephrine and to all other measures, cardiac and respiratory failure appeared imminent when treatment was begun. In each case objective improvement followed inhalation of the helium-oxygen mixture, either immediately or within half an hour after beginning of treatment, increasing progressively until epinephrine sensitivity was completely restored in a period which varied between two to five hours and two to five days. One of the patients who had appeared moribund as a result of prolonged asthma prior to admission regained epinephrine sensitivity after one day of treatment, after discharge from the hospital severe asthmatic seizures returned, and one year later he died during a spell of continuous asthma. From what records we were able to obtain, he took epinephrine in large doses for twelve days with progressively diminishing relief. Three other deaths were reported to me in patients who went into status asthmaticus during the same year. Although in a given instance it may be impossible to state that a fatal outcome would necessarily have taken place, the clinical picture warranted such an impression, as it did in the three cases described by Maytum, Prickman and Boothby.¹⁴ In ten other cases in which almost complete refractoriness to epinephrine was present coincident with preexisting prolonged more or less continuous asthma, inhalations of helium with oxygen were followed by subjective and objective evidence of improvement with restoration of epinephrine sensitivity in from one to five days of treatment. In three cases epinephrine refractoriness did not disappear, although the failure to obtain a good result in these instances appeared to be in large part traceable to lack of cooperation on the part of the patients. The length of improvement following helium and oxygen treatment is extremely variable, in some cases severe asthma recurred in from two to four weeks, whereas in others no return of severe symptoms has taken place in from six months to two years.

The search for an etiologic factor must necessarily be a continuous project in many of these very severe cases. The function of helium is viewed as a method

of restoring epinephrine sensitivity when it has been lost and not as a substitute for epinephrine when it is effective.

OBSTRUCTIVE CONDITIONS OF THE TRACHEA, LARYNX AND BRONCHI

In a previous clinical communication⁸ the relief of obstructive dyspnea in patients with constriction of the trachea or larynx was reported. The results in twenty-one consecutive cases will be summarized.²⁰ The principles already discussed apply in the main, with certain modifications, to obstructive conditions in the upper air passages. Deflation of the smaller bronchial tubes occurs in the asthma patient in expiration, owing to the termination of the inflating effect of the negative pressure within the chest and also in some cases to a positive compressing expiratory force which locks air in the alveoli. In the respiratory tubes outside the chest this effect is absent and furthermore the cartilaginous rings of themselves maintain the integrity of the lumen. In this circumstance may be found the explanation of the relatively prolonged expiration in asthma patients as compared to patients with laryngeal or tracheal obstruction. In the former an attempt to hurry the outflow of air by forcible expiration might collapse the delicate bronchiolar structures and thereby increase the difficulty, expiration, therefore, is generally observed as a more passive, prolonged process in asthma than in obstruction in the upper air passages, where no such dilemma exists. For that reason positive pressure was thought more applicable to asthma than to lesions outside the chest.

The clinical indication for the use of helium in this group is mainly to be found in children in whom inflammatory swelling of the larynx and trachea, due to infection, foreign body or instrumentation, is frequent, although similar conditions occur in adults. Tracheotomy in infants, particularly with previous infection, is so likely to lead to bronchopneumonia that we have attempted to secure through the inhalation of a helium-oxygen mixture sufficient relief from dyspnea and rest to the respiratory musculature as to obviate the need for surgery. Even in adults in whom transient laryngeal edema occurred as the result of x-ray therapy of a carcinomatous lesion or of instrumentation, helium-oxygen inhalation has been tried first, with the cooperation of the laryngologic staff.

Of twenty-one patients treated, five must be excluded either because they were moribund or because helium had to be withdrawn prematurely. There were sixteen remaining patients in whom an opportunity for clinical judgment was present by the pediatrician, the laryngologist and myself.²¹ There were three cases in which the degree of obstruction was such as to prevent adequate relief from the inhalation of helium. Through the use of helium mixed with a variable proportion of oxygen, it should be possible to compensate for approximately a 50 per cent constriction in the lumen of the tubal respiratory system, but it is obvious that obstruction may proceed to a point which will nullify the function of the gas. In eight cases the administration of helium with oxygen was temporarily helpful, at times for as long as eight days, but eventually the progress of the lesion necessitated tracheotomy. Four of these patients recovered and four died. In none of the cases

20 A more detailed report including the interrelation between inhalational therapy and laryngology will be published separately by Kernan and myself.

21 The author is indebted to Dr. Rustin McIntosh, director of the Babies Hospital in the Columbia Medical Center for his cooperation in making this material available.

was there any reason to believe that earlier tracheotomy would have improved the prognosis, whereas the reverse was conceivably true, that a further trial of helium therapy might have been preferable to tracheotomy. The remaining five patients were relieved of the major portion of their dyspnea and recovered without tracheotomy, with an ultimate resolution of the inflammatory swelling causative of the obstruction. It might be mentioned that retraction signs, either above or below the sternum with intercostal retraction, were present in all patients treated.

The function of helium in this group is to provide relief to obstructive dyspnea arising from inflammatory swelling and in that way avert tracheotomy. The laryngologist, however, cannot be dispensed with, as his attendance is necessary during the process of treatment as well as in the eventuality that the degree of relief is insufficient. Even when relief is only partial and retraction signs persist after inauguration of helium therapy, a conservative attitude toward tracheotomy is warranted, for in some instances a slight decrease in the edema increases markedly the effectiveness of helium and the child may be spared a surgical procedure which might itself produce complications.

EMPHYSEMA, BRONCHIECTASIS, PULMONARY FIBROSIS

The clinical illnesses emphysema, bronchiectasis and pulmonary fibrosis, so interrelated anatomically and etiologically, have in many instances a common pathophysiologic factor, namely, bronchial or bronchiolar obstruction. Owing to spasm, edematous swelling, or collapse or distortion of the lumen, the smaller bronchial tubes and alveolar ducts mechanically hinder the movement of air in and out of the alveolar spaces. The existence of bronchiolar spasm in cases of emphysema was discussed by Hoover,²² who employed epinephrine as a measure of its presence. Richards and Kournand²³ have taken measurements that show significant increases in vital capacity after epinephrine. The therapeutic usefulness of helium is therefore based primarily on the existence of varying degrees of obstruction in these cases. There is the additional theoretical assumption that better oxygenation will take place with the employment of a 21 per cent oxygen-79 per cent helium mixture than with air, because of the increased diffusion of the lighter gas. In figure 4 a comparison is made between inhaling successively air, 100 per cent oxygen, and a 21 per cent oxygen-79 per cent helium mixture (the latter with 8 cm of water pressure). It will be seen that the pulmonary ventilation in air was 15,750 cc per minute with a tidal volume of 716 cc., in 100 per cent oxygen the pulmonary ventilation dropped to 10,700 cc., with a tidal volume of 563 cc., with 21 per cent oxygen-79 per cent helium the pulmonary ventilation was 10,600 cc., the tidal volume 444 cc. The marked drop in ventilation due to 100 per cent oxygen is the basis for the therapeutic reconditioning of these patients and is worth emphasizing, because of the common medical attitude of apathy and hopelessness toward these patients. As discussed earlier in the paper, the stretching of the elastic elements of the lung during inspiration is in my view the pathophysiologic factor in the production of emphysema. Such an obvious reduction in ventilatory needs as the foregoing test indicated was made the basis of oxygen treatment, which in a week lowered the ventilation still further to 6 liters per

minute. The paroxysmal cough that these patients endure appears to be in part maintained by anoxemia. Coughing raises the intra-alveolar oxygen concentration and also tends to inflate partially collapsed bronchioles. In cases under our observation, oxygen treatment has terminated or markedly decreased not only the cough but also the expectoration, which is frequently not the cause of coughing but a result.

The decrease in tidal volume and pulmonary ventilation during the inhalation of helium with oxygen is in part due to the increased pressure, but patients with emphysema in certain instances may become equally free from dyspnea by breathing either 100 per cent oxygen or 25 per cent oxygen and 75 per cent helium, illustrating the function of helium in counteracting the obstructive element in this condition.²⁴ In two cases, one of emphysema and one of asthma, in which an accidental pneumothorax had taken place, an exceedingly severe type of dyspnea resulted in which a mixture of 35 per cent oxygen and 65 per cent helium was followed by a degree of relief not obtained by pure oxygen or higher percentages of helium with lower oxygen concentrations.

For the more long continued treatment of emphysema, in which I now employ oxygen, the use of helium with oxygen would have substantial advantages. Some times the dyspnea of emphysema is not relieved until concentrations between 90 and 100 per cent oxygen are inhaled, when a similar degree of relief could have been obtained with lower oxygen percentages in the presence of helium instead of nitrogen. The present

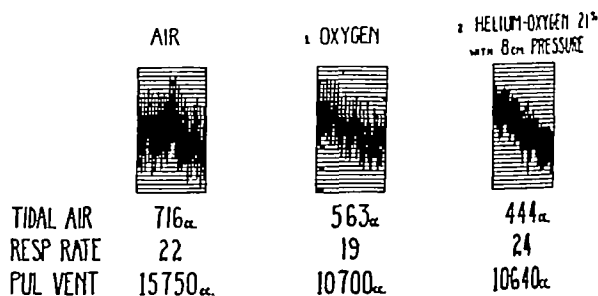


Fig 4—Decrease in pulmonary ventilation in a patient with emphysema and pulmonary fibrosis due to inhalation of (1) oxygen and (2) helium with oxygen under positive pressure.

price of helium, until the government makes available a small part of its enormous supply, makes impracticable at the moment any long continued program of treatment of the emphysematous patient with helium oxygen mixtures instead of pure oxygen.

SUMMARY AND CONCLUSIONS

Because of the low density of helium, a respirable mixture of helium with oxygen requires considerably less effort to breathe than air or oxygen in patients suffering from obstructive dyspnea.

There were eighteen cases of severe asthma and twenty-one cases of obstruction in the upper air passages in this series. In status asthmaticus the treatment may result in the saving of life, five cases in the series seem

24 The helpful effect of positive pressure in expiration as well as inspiration in patients with asthma and emphysema explains the clinical observation that some patients will purse their lips in such a way as to create an obstruction to expiration as if they were blowing against resistance. The purposeful nature of this at first sight extraordinary performance is confirmed by their own confession that they feel "easier" in their breathing. The groan in pneumonia seems to me to have a purposeful significance also. It builds up a positive expiratory pressure against the pulmonary capillaries tending to prevent exudation of serum into the alveoli. As will be described in a subsequent publication, pulmonary edema is susceptible of prevention in animals and relief in man by inhalation of air under positive pressure.

22 Hoover, C. F. Respiratory Symptomatology. Nelson & Loose Leaf Medicine 3: 383, 1923.

23 Richards, D. W., and Kournand, A., to be published.

ingly being in this group, in severe, more or less continuous asthma, in an amelioration of the disease with recovery of complete sensitiveness to epinephrine in patients who previously had become refractory to it, as occurred in ten additional cases. In obstruction of the pulmonary airway from the bronchiole to the pharynx, inhalation of helium with oxygen lessens the respiratory effort and aids ventilation of the lungs, in some instances thereby averting tracheotomy, five patients in this series recovered without tracheotomy. In patients in whom the obstruction is below the trachea, dyspnea may be relieved when tracheotomy itself would be unavailing.

The usefulness of helium with oxygen in emphysema, associated with bronchiectasis or fibrosis or both, is compared to the procedure when oxygen treatment alone is employed. Smaller concentrations of oxygen may produce similar restoration of pulmonary function when helium is used as the diluent of oxygen instead of nitrogen.

The clinical reaction to inhalation of helium with oxygen may be used as a diagnostic procedure to determine the presence or absence of obstruction in the pulmonary airway and associated pulmonary functions.

893 Park Avenue.

ABSTRACT OF DISCUSSION

DR. FRANCIS M. RACKEMANN, Boston. It is obvious that Dr. Barach has presented an important method for the treatment of very difficult situations. I should like to emphasize one point about asthma, namely, that the pathology depends on the formation of very tough and very tenacious mucous plugs in the medium sized and smaller bronchi. These plugs cause obstruction, which may be complete, producing real asphyxia, and death is not unknown. Patients with this condition may therefore be in very real danger. Up to now, their treatment has been very difficult, but those of us who must take care of patients with severe asthma should be very grateful to Dr. Barach for giving us this new method. His observations on the effect of increasing the pressure of the inspired air confirms the clinical impression that the sucking or pulling action of the thorax is much more potent in producing the symptoms and producing the emphysema than is the pushing action of forced expiration.

DR. C. K. MAYTUM, Rochester, Minn. I congratulate Dr. Barach for presenting a most valuable method for relieving the symptoms of patients suffering from severe respiratory obstruction. My experience with helium and oxygen has not been as extensive as Dr. Barach's. I have used it only in the severest cases of asthma that is in the so-called status asthmaticus and the severe asthmatic attacks that follow the ingestion of certain drugs to which the patient is sensitive, in our cases acetyl-salicylic acid. I have used it only as a last resort when all other methods have failed to relieve the patient's symptoms. I have now used it in four cases, and the results have been satisfactory and confirm those of Dr. Barach. Oxygen alone in such cases does very little either toward relieving the dyspnea or the cyanosis that is also present. However, in my cases, as with Dr. Barach's, when helium and oxygen was substituted for mixtures of air and oxygen, relief was almost immediately apparent. The breathing becomes much easier, with much less effort, and the patient can relax, which is an important factor in overcoming the symptoms in these cases. The cyanosis gradually lessens and the attack gradually subsides. My patients also seem to be insensitive to epinephrine. Even large doses give little relief, and what relief is obtained is of very short duration. In my cases also, after the relief of the attack, the patients again reacted to the use of epinephrine in the ordinary dosage. I noted the same effect in 1931, in a few cases in which I relieved patients by colonic ether anesthesia. These patients, after relief from their asthmatic attacks, again became sensitive to epinephrine. It is unfortunate that the expense of helium and the technical difficulties in its administration must at least at present limit

its use. I hope that future developments will make it more generally available and that there will be a substantial reduction in its cost.

DR. JOHN D. KERNAN, New York. There are many cases of transient laryngeal dyspnea, occurring principally in children, in which the attending physician feels that neither intubation nor tracheotomy is required. And yet these cases are distressing to observe, and the suffering of the patient is considerable. Helium and oxygen will promptly relieve them. There is another type of case in which the amount of obstruction is no greater than in the first class but in which the long continued obstruction is a source of danger. Lack of sleep, lack of ability to eat and take fluids, and the strain on the circulation tend after a certain time to exhaust the patient. These are cases in which intubation might be used. The use of helium and oxygen makes the use of intubation with its attendant dangers of bronchopneumonia and retention of the tube unnecessary. Even a few hours in the helium-oxygen tent would so restore the child's strength that further gas therapy would be unnecessary, although the obstruction to the breathing might not be entirely relieved. In cases of greater obstruction in which a tracheotomy might be required, the patient will often be carried along for several days. Prolonged treatment is not practical in those cases in which the cause of the obstruction may be permanent, such as in congenital narrowing of the trachea, tumors or webs in the larynx. These patients must be tracheotomized. But even here the gas therapy is of the greatest use, since doing a tracheotomy on a patient moribund from strangulation and exhaustion is a very different procedure from a tracheotomy performed on a patient protected from exhaustion by the use of the gases. That is one of the most important uses of helium and oxygen in laryngeal obstruction. Many patients are admitted to the hospital almost at the point of death, cyanotic, the lungs congested and heart dilated. These symptoms may be temporarily relieved by inhalations, the patient taken to the operating room with a gas mask on the face, and the operation done under as favorable circumstances as possible. The only relief that can be compared to this is that obtained by the passage of the bronchoscope and the performance of a tracheotomy with the bronchoscope in position. Briefly, helium-oxygen therapy is indicated (1) for the relief of symptoms even when intubation or tracheotomy is not required, (2) in more severe cases in which intubation or tracheotomy would be required if the gas were not available, and (3) in cases of such severe dyspnea that tracheotomy is required and yet on account of the severity of the symptoms cannot be safely done.

DR. FRANK H. LAHEY, Boston. I did not come to the medical section to relate my experiences with the management of asthma but rather to express my appreciation to Dr. Barach for the development of this method of introducing oxygen in patients who are so greatly in need of it, and to relate also the experience of our anesthetists who have taken up this suggestion of Dr. Barach and who now advantageously employ helium in certain of the cases with which we have to deal, goitrous patients with narrow tracheas, those with goiters that are intrathoracic in location and those with the respiratory emergencies which not infrequently arise in thyroid surgery. Drs. Sise, Woodbridge and Eversole have now employed helium in a considerable number of cases. I am sure that within the last six months helium has saved the lives of at least three patients who have come to the clinic for operation with enormous intrathoracic goiters. When we have these very large and very deep intrathoracic goiters, extending sometimes nearly to the diaphragm, it becomes almost impossible to introduce an intratracheal catheter because of the distortion of the trachea. It therefore becomes almost impossible to have these patients get enough oxygen when anesthetized so that they can remain of good color. The employment of helium mixed with oxygen in these cases has resulted in a good return of color and permitted the operation to be completed. In emergencies in which there has been a collapse of the trachea in the middle of an operation on a goiter, the employment of helium and oxygen mixtures has permitted these patients to be put in such a condition that the intratracheal catheter could be introduced through the laryngoscope and the operation completed. I am prompted to come here and speak because of the possibility

that anesthetists throughout the country are not familiar with this application of helium and are not employing it in cases in which I am sure that it will save patients' lives. We now have a tank of helium attached to every anesthesia apparatus in the clinic because, when one has such an emergency, helium should be at hand and immediately available. This is a great advance. We surgeons are indebted to Dr. Barach, and I am sure that not only with asthmatic cases but with surgical cases it will save many lives.

DR. WILLIAM J. KERR, San Francisco. In our clinic we have had but a limited experience in the use of helium and oxygen in obstructions of the respiratory tract, but we have been very much interested and pleased with the results to date. In patients with obstruction or asthma the relief is often remarkable and the patient appears to be greatly benefited by the rest obtained and the ability to take proper nourishment. I hope that in the very near future some way will be found to have adequate equipment available in all hospitals for the use of helium equipment available in all hospitals for the use of helium or helium and oxygen, and that we shall be able to secure supplies from the one source in the country where it may be obtained and at a very nominal figure and that is from the federal government. It seems to me that helium should be put in the hands of competent physicians, because it is one of the adjuncts in saving lives.

DR. ALVAN L. BARACH, New York. The House of Representatives has passed a bill making government helium available at what will be a cost comparable to oxygen, but at the moment it is held up in the appropriations committee of the United States Senate. Whether it will go through there or not, at this moment I am unable to tell. Should it be passed in its original form, helium will be commonly available at a more reasonable cost, although it may now be obtained commercially and reused with more economy than when it was first presented.

PRESENT STATUS OF DIETARY REGIMENS IN URINARY INFECTIONS

ANSON L. CLARK, M.D.
OKLAHOMA CITY

Urology, as one of the younger medical specialties, has made rapid advances and has a record of brilliant achievement. During the last forty years the surgical and diagnostic branches, aided by the inventive genius of men within and without the profession, have produced remarkable results. The medical side of urology, on the contrary, had advanced more slowly. Modern textbooks of urology attest to the rapid change in surgical practice and instrumental technic, but the lack of advance in the medical branch left open a fertile field for charlatans and drug promoters.

During the last five years, however, medical urology has progressed in two ways: first by a more careful study of the organisms most frequently associated with urologic infections, and, second, by attempts at inhibiting the growth of those organisms with dietary therapy. In studying the causes and prevention of urinary calculi, emphasis has been placed on other causes besides the important fundamental one, namely, urinary stasis. Endocrine disturbances have been recognized as being a contributing factor, but dietetic excesses and deficiencies have proved of greatest importance.

Theoretically, the etiologic factors of infections of the urinary tract and urinary calculi are many and varied, but it is now recognized that trauma from crystalline elements formed in the kidney may be a contributing cause. For instance it is well known that certain foods produce an increase in the calcium

oxalate content of the urine. There is also another source of an oxaluria. Wilder states that, "in the presence of certain unusual flora oxalic acid and other organic acids may be formed by fermentation of carbohydrates in the gastro-intestinal tract." The extensive use of yeast so popularly advertised may thus be a cause of increasing the crystalline elements in the urine. Several patients have been observed who passed numerous small oxalate calculi following the prolonged ingestion of yeast. With the excessive fermentation that must follow a diet containing a cake of yeast three times a day, sufficient change in carbohydrate metabolism may take place to increase the oxalates in the urine to a dangerous amount.

While important advances have been made in therapeutic measures involving the study of foods, and their preparation and combination, it must be pointed out that only a small portion of the population is being benefited at present by these recent discoveries. This is largely due to a lack of time necessary to apply this knowledge. When the average physician undertakes the complex problem of figuring the calories, carbohydrates, proteins, fats, fatty acid-dextrose ratio and 3 per cent vegetables and then adds to this the task of training a patient who, though interested, knows nothing of scientific food regulation, one understands the frequent use of the prescription blank in combating infections of the urinary tract. But the results produced by dietetics in urology have been sufficiently successful to make it imperative that this type of treatment be made more widely available. Wherever it is possible, these measures should be so simplified as to make them applicable to office practice. Hospitalization, diet kitchens and special dietary management, as applied in large medical centers, increase the cost of treatment till it becomes prohibitive for the majority of those afflicted.

Five years ago for the first time the ketogenic diet was given to a patient in an effort to control a very resistant recurrent cystitis and pyelitis in which the infecting organism was the colon bacillus.¹ For fourteen months previous to this, many different types of therapy had been applied at several medical centers with only temporary relief to the patient. The products of the ketogenic diet permanently eliminated the infecting organism from the urine in twelve days.

Since that time the result achieved in that one case has stimulated many other experiments and investigations. In an analysis of the first 200 instances in which this type of therapy was used, it was found successful in approximately two out of three instances. Statistics show that the ketogenic treatment has been even more successful in the child, possibly because the liver of the adult has a greater glycogen storage capacity.

Fuller² of London was the first to discover that beta-hydroxybutyric acid excreted in the urine by this altered dietary intake inhibited the growth of the infecting organism. It had already been recognized that, in addition to the change in diet, an increased acidity of the urine was a necessity for successful results. Several authors then reported experiments which showed that bacterial growth in the urinary tract would be inhibited by a concentration in the urine of 0.5 per cent beta-hydroxybutyric acid, and an acidity of the urine of pH 5.2.

Two years ago an evaluation of the ketogenic treatment showed that its scope was limited. Many sufferers

from pyelitis or cystitis were unable to obtain careful and exact dietetic supervision. Accordingly a simplified method of dietary regimen was suggested in which the food intake consisted largely of 40 per cent cream and eggs.³ The disadvantage of this simplified method is the gastro-intestinal upset that usually accompanies such an abnormal food intake. As an offset to this the

TABLE 1—*Elaborate Ketogenic Diet*

GENERAL INSTRUCTIONS

- 1 Satisfactory results cannot be obtained unless this diet is followed absolutely as outlined
- 2 All food must be measured carefully and accurately. A standard measuring cup, teaspoon and tablespoon must be used
- 3 No food or beverage other than that listed is to be taken
- 4 Eat no sugars or sweets of any kind. Saccharin a substitute for sugar may be used
- 5 Coffee, tea and seasonings may be used as desired
- 6 Bran wafers must have no food value and may be used as desired
- 7 Do not chew gum or tobacco. Smoking is permitted
- 8 Water should be taken only in moderate amounts
- 9 No cathartics are to be used other than liquid petrolatum or bitter cascara. Magnesia magma or other sweet cathartics will cause failures
- 10 Take no medicine unless prescribed by the physician
- 11 If you become nauseated while on the diet omit a meal or two, taking a half glass of tomato juice, half an orange or a glass of sour lemonade

MENU PLAN

Include the following foods daily and in the exact amounts specified

Eggs	Two
Bacon	4 strips 6 inches long
Vegetables	1½ cups
Whipping cream (extra heavy)	1¼ cups
Butter or oil mayonnaise	5 tablespoons
Meat	2½ ounces or 3" by 4" by ¼" thick

Menus 1, 2, 3 and 4 suggest possible combinations. Many interesting menus may be planned however when different vegetables are used and eggs and cream are prepared in various dishes.

POSSIBLE SUBSTITUTIONS

- 1 2 tablespoons of cottage cheese plus 1 teaspoon of butter or oil mayonnaise may be substituted for one egg
- 2 One ounce of American cheese or meat may be substituted for one egg
- 3 ½ of a small orange may be substituted for ¼ cup of vegetables

VEGETABLE LIST

Asparagus	Greens beet
Beans string	Greens mustard
Broccoli	Greens turnip
Brussels sprouts	Green peppers
Cauliflower	Rhubarb
Celery	Sauerkraut
Cucumbers	Spinach
Egg plant	Tomatoes

BREAKFAST

MENU 1

Egg fried	One
Bacon	4 strips 6" long
Bran wafers	As desired
Butter	1 tablespoon
Heavy whipping cream	¼ cup
Coffee or tea	If desired

LUNCH

Soup	
Heavy whipping cream	¾ cup
Tomato	½ cup
Seasoning	
Salad	
Hard cooked egg on	One
Lettuce leaf	One
Oil mayonnaise	1 tablespoon
Bran wafers	As desired
Butter	1 tablespoon

DINNER

Roast pork	3" x 4" x ¼"
Creamed cauliflower	
Cauliflower	½ cup
Heavy whipping cream	¼ cup
Lettuce salad	½ cup
Oil mayonnaise	1 tablespoon
Bran wafers	As desired
Butter	1 tablespoon

BREAKFAST

MENU 2

Egg poached	One
Bacon	4 strips 6" long
Bran wafers	As desired
Butter	1 tablespoon
Heavy whipping cream	¼ cup
Coffee or tea	As desired

LUNCH

Soup	
Celery diced	¾ cup
Heavy whipping cream	½ cup
Water	½ cup
Salad	
Orange sections	½ of a small orange
Oil mayonnaise	1 tablespoon
Lettuce leaf	One
Bran wafers	As desired
Butter	1 tablespoon

DINNER

Broiled steak	3" x 4" x ¼"
String beans	½ cup
Lettuce salad	½ cup
Oil mayonnaise	1 tablespoon
Bran wafers	As desired
Butter	1 tablespoon
Baked custard or custard ice cream	One
Egg	½ cup
Heavy whipping cream	¼ cup
Water	¼ cup
Nutmeg & saccharin	If desired

BREAKFAST

MENU 3

Scrambled eggs	
Egg	Two
Heavy whipping cream	¼ cup
Bran wafers	As desired
Butter	1 tablespoon
Heavy whipping cream	¼ cup
Coffee or tea	As desired

LUNCH

Crisp bacon	4 strips 6" long
Spinach	½ cup
Lettuce and tomato salad	½ cup
Oil mayonnaise	1 tablespoon
Bran wafers	As desired
Butter	1 tablespoon
Iced coffee	
Coffee	As desired
Heavy whipping cream	¼ cup

DINNER

Fish	3" x 4" x ¼"
Creamed celery	
Celery	½ cup
Heavy whipping cream	¼ cup
Bran wafers	As desired
Butter	2 tablespoons

BREAKFAST

MENU 4

Tomato juice	½ glass
Bacon	4 strips 6" long
Bran wafers	As desired
Butter	2 tablespoons
Heavy whipping cream	¼ cup
Coffee or tea	As desired

LUNCH

Egg omelet	
Egg	One
Heavy whipping cream	2 tablespoons
Butter	2 tablespoons
Seasoning	As desired
Asparagus	½ cup
Cottage cheese salad	
Cottage cheese	2 heaping tablespoons
Heavy whipping cream	2 tablespoons
Oil mayonnaise	1 teaspoon
Bran wafers	As desired
Butter	2 tablespoons

DINNER

Soup	
Heavy whipping cream	¾ cup
Spinach or tomato	¼ cup
Water	¼ cup
Chicken salad	
Diced chicken	½ cup
Diced celery	¼ cup
Lettuce leaf	One
Oil mayonnaise	2 tablespoons
Bran wafers	As desired
Butter	2 tablespoons

course of treatment is shortened, thus minimizing the expense as to both time of medical supervision and dietary cost.

Nesbit⁴ of Ann Arbor, Mich., suggested applying the acidosis and ketosis produced by a starvation diet to the treatment of infections of the urinary tract. In a series of 200 patients given this type of ketogenic diet, remarkable results were shown. The drawback to the starvation method is the length of time necessary to obtain ketosis sufficient to achieve satisfactory results. This is important in office practice. The

3 Clark, A. L. and Keltz, B. F. A Simplified Treatment of Bacilluria. J. A. M. A. 104: 289-291 (Jan. 26) 1935.

4 Nesbit, R. M. Low Calory Low Fat Ketogenic Diet for Treatment of Infections of Urinary Tract. J. A. M. A. 105: 1183-1184 (Oct. 12) 1935.

advantage of the starvation ketosis diet lies in the gastro-intestinal comfort of the patient. Nesbit maintains that after the first forty-eight hours the pangs of hunger are slight.

Herrold⁵ has suggested a still more limited food intake which makes it possible to use the low calory ketogenic diet as an office procedure. So today for

TABLE 2—Simplified Ketogenic Diet

General Instructions as in table 1

MENU PLAN

Include the following foods daily in the exact amounts specified

Heavy whipping cream 1½ pints (3 cups)
Eggs Six

Any combination of two eggs and one cup of cream may be used at each meal. Below are three suggestions. If desired some cream may be used between meals with coffee or tea.

BREAKFAST

Scrambled eggs Two
Eggs ¾ cup
Heavy whipping cream As desired
Bran wafers ¾ cup
Heavy whipping cream As desired
Butter As desired
Coffee or tea As desired

LUNCH

Poached egg One
Baked custard or custard ice cream
Egg One
Heavy whipping cream 1 cup
Water ¼ cup
Nutmeg and saccharin If desired
Bran wafers As desired
Butter As desired

DINNER

Egg omelet Two
Eggs ¾ cup
Heavy whipping cream As desired
Bran wafers ¾ cup
Iced coffee As desired
Coffee ¼ cup
Heavy whipping cream As desired
Butter As desired

combating infections of the urinary tract there is available a simplified ketogenic diet, an elaborate ketogenic diet and a low calory ketogenic diet, each with its particular advantages but all producing results in medical urology hitherto not achieved.

Table 1 contains a suggestion for an elaborate ketogenic diet with a fatty acid-dextrose ratio of 4:1. It is essential that the list of important instructions be emphasized to the patient. A simplified ketogenic diet is suggested in table 2 and a low calory ketogenic diet, with sample menus, is given in table 3.⁶

In this day of rapid advances it is most probable that scientific research, having discovered the reason for the success of these dietary measures in combating infections, may lead to still greater simplification in urologic therapeutics. As already stated, Fuller recognized the important part played by beta-hydroxybutyric acid in inhibiting the growth of bacterial invaders. Starting with this fact, Rosenheim⁷ suggested that a keto or hydroxy acid, if nontoxic, which would be excreted unchanged in the urine might replace the ketogenic diet. After considering a number of such acids and comparing them with beta-hydroxybutyric acid in respect to their bacteriostatic powers *in vitro*, he has found that mandelic acid fulfils the theoretical requirements better than any of the other similar agents. This acid is a hydroxy acid, it is nontoxic and is excreted unaltered in the urine, which it renders bacteriostatic. The adult dosage suggested is 12 Gm of mandelic acid daily in divided doses. At the same time the acidity of the urine is increased by giving either ammonium

nitrate or ammonium chloride orally. Mandelic acid is soluble in water and is most satisfactorily given in the form of a sodium salt. From a 16 ounce (480 cc.) mixture containing 48 Gm of mandelic acid (neutralized by 25.6 Gm of sodium bicarbonate and flavored as desired), 1 ounce (30 cc.) is given four times a day as an average adult dose. With this, from 6 to 8 Gm. of ammonium chloride may be given daily in divided doses. During this medication the patient takes his normal general diet. From the results in a small series of patients it is apparent that the bacteriostatic power of the urine containing mandelic acid is sufficient to recommend this type of therapy before a diet is employed which causes such gastro-intestinal discomfort as does the ketogenic diet.

The sodium salt of mandelic acid is not unpleasant to take, and the only objection to this treatment is the large doses of ammonium chloride prescribed in conjunction with the acid. In my practice it has been employed with patients of various ages, from 3 years

TABLE 3—Low Calory Ketogenic Diet

General instructions as in table 1 and 2 except that butter or oil mayonnaise may be used in any quantity desired to make the diet more palatable.

MENU PLAN

Include the following foods daily and in the exact amounts specified

Eggs Two
Crisp bacon 4 strips 6" long
Lean meat 2½ ounces or 3" x 4" x ¼" thick
Vegetables (from list below) 2 cups
Whole milk or buttermilk ½ cup
Butter or oil mayonnaise 3 teaspoons or more if desired

Possible substitutions same as in table 1
Vegetable list same as in table 1

BREAKFAST

MENU 1

Tomato juice ½ cup
Egg scrambled One
Bacon crisp 4 strips 6" long
Bran wafers As desired
Butter 1 teaspoon
Coffee or tea As desired

LUNCH

Cauliflower ½ cup
Salad
Sectioned orange ½ of a small orange
Lettuce leaf One
Bran wafers As desired
Butter or oil mayonnaise 1 teaspoon
Baked custard
Egg One
Whole milk ½ cup
Nutmeg or saccharin If desired

DINNER

Broiled steak 3" x 4" x ¼"
Asparagus ½ cup
Bran wafers As desired
Butter 1 teaspoon

BREAKFAST

MENU 2

Orange ½ of a small orange
Poached egg One
Crisp bacon 4 strips 6" long
Bran wafers As desired
Butter 1 teaspoon
Coffee or tea If desired

LUNCH

Spinach ½ cup
Hard cooked egg One
Bran wafers As desired
Butter 1 teaspoon
Whole milk ½ cup

DINNER

Roast beef 3" x 2" x ¼"
String beans ½ cup
Shredded lettuce ½ cup
Oil mayonnaise If desired
Bran wafers If desired
Butter 1 teaspoon
Tea If desired

BREAKFAST

MENU 3

Egg soft cooked One
Bacon crisp 4 strips 6" long
Bran wafers As desired
Butter 1 teaspoon
Coffee or tea As desired

⁵ Herrold, Russell to be published.

⁶ The author is indebted to Mrs. Marjorie Sewell, chief dietitian at the University Hospital, Oklahoma City, for her help and advice in the preparation of these diets and menus.

⁷ Rosenheim, M. L., *Lancet* 1: 1032-1037 (May 4) 1935.

LUNCH

Soup	
Whole milk	$\frac{1}{2}$ cup
Celery diced	$\frac{1}{4}$ cup
Egg omelet	1 egg
Greens	$\frac{1}{4}$ cup
Bran wafers	As desired
Butter	1 teaspoon

DINNER

Baked fish	3" x 4" x $\frac{1}{4}$ "
Stewed tomatoes	$\frac{1}{4}$ cup
Lettuce shredded	$\frac{1}{2}$ cup
Oil mayonnaise	If desired
Bran wafers	As desired
Butter	1 teaspoon

BREAKFAST

MENU 4

Orange	$\frac{1}{2}$ of a small orange
Eggs scrambled	Two
Bran wafers	As desired
Butter	1 teaspoon
Coffee or tea	As desired

LUNCH

Crisp bacon	4 strips 6" long
Asparagus	$\frac{1}{2}$ cup
Lettuce and cucumber salad	$\frac{1}{4}$ cup
Oil mayonnaise	As desired
Bran wafers	As desired
Butter	1 teaspoon

DINNER

Soup	
Whole milk	$\frac{1}{2}$ cup
Tomato juice	$\frac{1}{4}$ cup
Salad	
Chicken diced	$\frac{1}{2}$ cup
Celery diced	$\frac{1}{4}$ cup
Lettuce leaf	One
Oil mayonnaise	As desired
Bran wafers	As desired
Butter	1 teaspoon

to 76 years, with no apparent toxic effects. The 3 year old child had had an acute bacillary cystitis and pyelitis four weeks before the mandelic acid was tried. At this time the infection was controlled to some extent with methenamine and sodium acid phosphate, but the infecting organism still remained in the urinary tract. A dosage for a 3 year old child, based on the adult dosage given, was prescribed for three days. The urine culture on the third day was sterile and the medication was discontinued. The patient has remained well.

In older patients it is necessary to continue the drug for considerably longer periods. Further studies as to the rapidity with which this acid is excreted by the kidneys will be necessary in order that the drug may be prescribed at just the right intervals to insure the highest uniform concentration in the urine during the twenty-four hour period.

The mandelic acid treatment seems to be another valuable addition to the armamentarium of urology, which has resulted from a closer cooperation with and better knowledge of dietetics.

SUMMARY AND CONCLUSIONS

1 Prolonged ingestion of yeast should be considered as a possible factor when calculi or an excessive amount of crystalline elements are present in the urinary tract.

2 It is essential that dietary therapy be simplified in order to reach the largest number of patients suffering from uncomplicated bacillary infections of the urinary tract.

3 Mandelic acid has proved to be an effective urinary antiseptic and should be tried before the ketogenic diet.

119 North Broadway

ABSTRACT OF DISCUSSION

DR. WILLIAM F. BRAASCH, Rochester, Minn. Dr. Clark was first in calling attention to the practical value of the ketogenic diet in treating urinary infection. Although this method has proved to be highly efficacious unfortunately the technical difficulties involved in its application have prevented widespread employment. Simplification of the diet and adap-

tation to the patient's idiosyncrasies as well as other modifications, including those suggested by Nesbit, have made it more acceptable for general use. The ketogenic diet is apparently of value not alone in combating urinary infection. There is evidence that it may be of value in controlling infections in other portions of the body. I have observed several patients with pyelonephritis and coincident acute cholecystitis which were apparently controlled by means of the ketogenic diet. Efficient as ketosis proved to be in combating bacilluria, it is after all a crude and ponderous method of establishing urinary antiseptics. Although American urologists were first to show the bactericidal effect of ketonurine, it remained for English chemists to discover the chemical ingredients that caused it. When Fuller discovered that beta-oxybutyric acid was the bactericidal factor in ketonurine, he opened a new and promising field of urinary antiseptics. Rosenheim, in searching for an organic acid which could be assimilated and excreted without breaking down, discovered that mandelic acid had antiseptic qualities when excreted in the urine, similar to beta-oxybutyric acid. My associates and I have used mandelic acid in both children and adults in more than fifty cases. Judging from our experience, it is quite probable that it will largely supplant the ketogenic diet as a routine procedure. That it will displace it entirely, however, is open to doubt. It has been possible to effect complete disappearance of bacteria from the urine in many of our patients with urinary infection. However, it does not seem to be so thorough as ketosis in preventing reappearance of infection, since bacteriuria reappeared in some cases after several weeks. The two methods combined will be found to be more bactericidal than when either is used alone. In order to have bactericidal action, acidification of the urine will be necessary with mandelic acid as it has been with oxybutyric acid. Mandelic acid together with the ketogenic diet, the high acid-ash diet, and the various modifications will unquestionably make it possible to control urinary infection in a high percentage of cases, particularly that group which has no complications. A new era of antiseptics has been revealed within the last few years, and progress along the lines of urinary acidification, together with organic acid elimination in the urine, present attractive vistas for further investigation.

DR. RICHARD CHUTE, Boston. I have had the opportunity of seeing the use of mandelic acid in a few cases with apparently brilliant results. The cases have been so few and followed for such a short time that I am unable to give any final data on them. I think, however, that a great deal will be heard about it in the next few years.

DR. CHARLES C. HIGGINS, Cleveland. Vitamin A is prescribed for two reasons: (1) to overcome deficiency in vitamin A if it is present and (2) for its specific effect on the epithelial structures. This effect is specific not only on the epithelium of the genito-urinary tract but also on the epithelium of the pulmonary and other mucous membranes. In the presence of vitamin A deficiency in the white rat the pH of the urine shifts strongly to the alkaline side, therefore the stones that are produced experimentally in the white rat are composed of calcium phosphate with traces of carbonate. If the phosphorus in the diet is decreased, a reversal in the chemical composition of the stone occurs and calcium carbonate with traces of phosphate are found. In patients, if a deficiency in vitamin A is present, it is not accompanied by a shift in the pH of the urine to the alkaline side. As Dr. Braasch has emphasized the dietary regimen is an additional procedure to be utilized in the management of patients with calculous disease. Obviously, infection must be eradicated, and I believe this should be accomplished before the patient leaves the hospital. In patients in whom we are able to demonstrate the presence of a urea splitting infection we prescribe the ketogenic diet following operation. As soon as the infection is eradicated we shift from the ketogenic diet over to the acid ash diet, which is not conducive to the production of acetone, diacetic acid or beta-oxybutyric acid in the urine or the alkaline ash diet is prescribed. Whether the high vitamin A acid ash or alkaline ash diet is prescribed depends on the pH of the urine secured from the kidney harboring the calculus and the chemical composition of the stone removed at operation. The patient can be maintained on these diets for a long period of time. It is important to remember that the acid-ash diet is not utilized

in all cases of calculous disease. If analysis of the stone shows it to be composed of cystine, xanthine or uric acid—salts that are precipitated in acid urine—the pH must be shifted to the alkaline side postoperatively. A pH of 6.8 suffices to maintain the uric acid and other acid salts in complete solution and below the point at which precipitation of phosphates and carbonates occurs. If stasis is demonstrated by the urogram, it must be correct postoperatively. A study of the pH curves of normal individuals and those with calculous disease shows that the initial precipitation of salts in the urine occurs at approximately the same level, however, I believe that each patient should be individualized, the urine carefully examined, and the pH estimated and maintained at a point at which the salts that are responsible for the formation of the original calculi are maintained in complete solution.

DR J. K. ORMOND, Detroit. I should like to ask whether this mandelic acid is effective in coccic infections as well as in bacterial infections.

DR ANSON L. CLARK, Oklahoma City. In answering the question of Dr Ormond apparently mandelic acid acts as a bacteriostatic agent in a rather similar way to the beta-hydroxybutyric acid produced by the ketogenic diet. In the adults it has been most successfully used in combating the bacillary infections while in children it has been used satisfactorily in both the bacillary and the coccic types of infection. Patients in the younger age bracket must be able to excrete the mandelic acid in a larger concentration. At present mandelic acid is a high priced chemical, at wholesale prices costing about \$45 a kilogram. To treat an adult patient from eight to ten days requires approximately 100 Gm of the mandelic acid.

BRODIE'S ABSCESS OF RADIUS, DUE TO TYPHOID

REPORT OF A CASE

WILLIAM B. MARBURY, M.D.
AND
HENRY L. PECKHAM, M.D.
WASHINGTON, D. C.

Typhoid of the bones is one of the unusual types of inflammatory bone diseases. To be more specific, Murphy¹ states that out of a series of 700 cases of osteomyelitis only three were caused by typhoid. This amounts to 0.43 per cent, or one out of 233 cases. Also osteomyelitis complicating typhoid is not at all common, for in another series of cases of typhoid reported by Murphy there were only 164 cases of osteomyelitis complicating 18,840 cases of typhoid, or 0.82 per cent. So uncommon is this condition that it is not usually suspected unless there is a definite history of typhoid and the constitutional symptoms of the osteomyelitis are unusually mild, even then it is not often thought of until the bacteriologist grows typhoid bacilli from the pus.

The various bones of the skeleton vary in their susceptibility to typhoid invasion, and in a different way from their variation of susceptibility to the common pyogenic organisms, such as the staphylococcus and the streptococcus. Thus the ribs are the most common bones involved in a typhoid osteomyelitis, with the tibia holding second place and the spinal column third place. In a series of 533 typhoid bone lesions, the ribs were involved in 135 cases, the tibia in 127, the spine in 110, the femur in 33, the ulna in 18, the humerus in 15, the foot in 10, the pelvis in 9, the maxilla in 8, the sternum, clavicle and hand each in 7, the radius in 5, and the rest distributed among the remaining bones. The case that

we are presenting in this paper is one involving the radius, a bone which is involved only once in 106 cases of osteomyelitis due to typhoid, and the frequency of this disease is thus seen to occur only once in more than 24,000 cases of osteomyelitis from all causes.

In bone disease following typhoid the symptoms usually come on so late that the typhoid bacillus is seldom considered as the etiologic factor. Several cases have been reported in the literature in which the patients had typhoid anywhere from five to fourteen years before bone symptoms developed. The interval in the present case amounted to about ten years during which time the patient had no symptoms whatever of bone involvement.

The bacteria found in pus taken from these cases of typhoid osteomyelitis vary. In ninety-nine cases the organisms isolated from the pus were as follows: B. typhosus, 71, pyogenic organisms alone, 15, no organisms, 7, paratyphoid strains, 3, B. typhosus and pyogenic organisms together, 2, B. typhosus and B. coli together, 1.

In the case here reported, the pathologic lesion consisted of an abscess in the medulla of the radius. In other words, Brodie's abscess. This lesion was first described by Dr Brodie² in 1832, at which time he presented a paper before a medical society with several case reports. The manner in which he discovered this condition is interesting. His first patient was a man with intractable bone pain in the tibia, no remedy that Dr Brodie tried had any effect, so he finally decided to amputate the man's leg. Later on he examined the leg in the laboratory and, on cutting through the bone longitudinally, he opened an abscess from which he obtained a drachm or two of dark pus. Then he realized that the amputation would probably not have been necessary had he known of the presence of the bone abscess, and in his subsequent cases he operated and drained the abscesses with good results.

Babcock, in his textbook on surgery, defined Brodie's abscess as a "bone cavity filled with serum or pus lined by a fibrous membrane with surrounding sclerosed bone and a tendency toward obliteration of the adjacent medullary cavity." These abscesses usually occur nearer to the center of the metaphysis than toward its distal end, as is the case in acute pyogenic osteomyelitis.

The causative organism is usually the staphylococcus but may be the streptococcus, the pneumococcus, B. coli and rarely the typhoid bacillus. These organisms always arrive at the bone as a result of a hematologic metastasis from a distant focus of infection.

The symptoms of Brodie's abscess are boring, aching, osteocopic pain, referred to the center of the bone and aggravated by use, marked tenderness on pressure or percussion, intermittent limp, hydrops of the adjacent joint, and local enlargement of the bone and of the superficial veins. The overlying skin may be red and tense with edema of the subjacent tissues, and elevation of the skin temperature. Constitutional symptoms are usually few.

A roentgenogram usually shows an area of rarefaction, surrounded by an area of increased density of the bone.

The diagnosis of Brodie's abscess is often difficult to make preoperatively, with a bony swelling, marked tenderness, continuous boring osteocopic pain and absence of marked constitutional symptoms. This can

¹ Murphy, J. B. Bone and Joint Disease in Relation to Typhoid Fever. Surg., Gynec. & Obst. 23: 119, 1916.

² Brodie, B. C. An Account of Some Cases of Chronic Abscess of the Tibia. M. Chir. Tr. 1: 238, 1832.

dation must always be kept in mind. In the differential diagnosis, gumma of the periosteum, malignant bone tumors, tuberculous periostitis and von Recklinghausen's disease are to be considered. Roentgen examination in these conditions is unusually helpful, as it gives a very distinctive picture in the various bone diseases.

The prognosis in Brodie's abscess is good if adequate drainage is supplied. Many times, however, especially in tuberculous or typhoid abscesses, a chronic sinus

may remain for years. Many of them heal in the course of a few months.

The treatment of this condition is immediate operation—the chiseling away of the bony roof of the abscess, curetting and cauterizing of the cavity with pure phenol, followed by alcohol, and packing open with petrolatum or iodoform gauze. It is even better, if possible to remove the entire abscess cavity wall, and then the wound may be closed tightly and healing occur by first intention. If the wound is packed open it is best to



Fig 1—Roentgen appearance of radius before operation.

leave the pack in place until the bone has regenerated considerably, as this stimulates the bone formation and keeps the wound from closing too soon, thus preventing recurrence of the same condition. In those abscesses due to typhoid, typhoid vaccine has been given to advantage.

REPORT OF CASE

History—H W, a girl aged 15 years, white, admitted to Emergency Hospital Dec. 6, 1935, complained of pain and swelling of the lower part of the left forearm.

Her present illness dated back to two months before this admission, at which time some pain and swelling developed in the left forearm. The swollen area was warm to the touch but showed no redness, and after one week the inflammation subsided. Following this illness the patient was clinically well for two months. Then on December 2, four days prior to her entrance to the hospital, a swelling appeared on the left forearm in the same place as the first one. This time the swelling was red, painful even when the arm was at rest, very tender and throbbed continuously, and the patient stated that she felt pins and needles in the fingers of the left hand. The patient had no general symptoms of note other than a subfebrile temperature of 99.6 F.

The past history revealed very little. Outside of measles and mumps, there was one other disease of importance, which was typhoid, at the age of 5 years.

Examination—On physical examination nothing was found except the local pathologic state of the left forearm. The tissues on the radial side of the forearm were tense and edematous at a point slightly below the junction of the lower and middle thirds. This swelling was very tender and appeared to be confined to the periradial tissues along the whole radial side of the forearm; there was some pain elicited on palpation. The skin overlying the area was of a dusky red hue and the surface temperature was elevated. Almost any motion of the

forearm, especially pronation or supination, resulted in a cry from the patient, and she held the forearm as though it were broken.

At this time a roentgenogram was taken which revealed an oval, slightly irregular, dark, translucent area within the shaft of the radius (fig 1). The cortex around this dark area appeared to be somewhat thinner than that in the rest of the shaft and seemed to bulge outward slightly. The remainder of the bone appeared to be normal.

The impression at this time was that the patient had an infected bone cyst of some nature, or Brodie's abscess. Von Recklinghausen's disease of the bone was considered also as a possible diagnosis, but blood calcium and phosphorus studies did not confirm this condition, the calcium being 10 and the phosphorus 34, both of which are within normal limits.

Urinalysis consistently showed only a very faint trace of albumin and some clumped pus cells.

A blood count taken the day after admission showed a hemoglobin of 84 per cent, red blood cells 4,350,000 and white blood cells 10,100 of which 61 per cent were polymorphonuclears, 34 per cent lymphocytes, 4 per cent monocytes and 1 per cent eosinophils. The blood Wassermann reaction was negative.

Course—The patient remained in the hospital ten days before it was decided to operate. During this time the temperature at no time exceeded 99.8 F, and the last six days it was normal. The forearm was kept in a splint constantly, as the slightest motion was painful.

Operation—December 16 the patient was taken to the operating room and the forearm opened. The periosteum of the radius was pinkish and was softer and more vascular than usual. When the cortex was chiseled away, pale greenish creamy pus was found under pressure within the cavity. The pus was evacuated and the interior of the cavity was swabbed with pure phenol followed by alcohol and packed open with petrolatum gauze. A cast was applied.

A smear made at the time of the operation showed many pus cells and a culture taken at the same time disclosed typhoid bacilli. Five days after the operation a blood Widal test was done and showed agglutination against B typhosus in dilutions ranging from 1 to 20 up as high as 1 to 320.

The postoperative course was uneventful and convalescence was rapid, there being no fever after the first postoperative day. December 23 a culture of the urine and feces was made here but no typhoid bacilli were found. December 25 a sample of feces was sent for culture to the Walter Reed General Hospital. The report again came back negative. December 27 the patient was discharged in much improved condition and was referred to the orthopedic clinic for follow-up care.

When the patient left the hospital the pain in her arm had practically subsided when she was seen Feb. 11, 1936, her arm felt well but was draining considerable serous material with a bad odor (Feb. 11, 1936). January 24 the gauze packing was removed. The wound showed a marked healing tendency as shown by abundant healthy granulation tissue. January 27 an x-ray plate was taken (fig 2) and the report was as follows:

Examination of the left wrist and lower forearm shows the cortex of the lateral aspect of the lower third of the radius to have been perforated. There is a rather marked elevation of the periosteum on both the mesial and lateral aspects and considerable absorption in the region of the wrist joint.

This patient has been seen several times since the last x-ray film was taken. April 1, healing was complete and union firm. There was no tenderness over the scar.



Fig 2—Roentgen appearance of radius after operation.

COMMENT

This case is a most unusual one. It demonstrates clearly that typhoid bacilli may and do remain quiescent in the human body for many years only to be reactivated at a time when least suspected. The ability of the body to throw out antibodies quickly when reinfection occurs in typhoid is well shown by the high titer of the blood Widal test in this case.

1015 Sixteenth Street

ADRENAL VIRILISM

WILLIAM SAPHIR, M.D.
AND
MORRIS L. PARKER, M.D.
CHICAGO

An active sex principle of the adrenal cortex has not yet been successfully elaborated. There is, however, ample clinical evidence that this endocrine tissue supplies an internal secretion related to the sexual sphere. The types of hypergonadism described in the literature as hirsutism, virilism, adrenogenital syndrome and the Achard-Thiers syndrome have been proved in many cases to be associated with adrenal cortex tumors.

It is not intended here to enter into a review of the literature, which may be found in some recent publications,¹ but to refer briefly to a few communications pertinent to this study.

From the clinical evidence at hand, the function of the adrenal sex hormone is clear and unique. It stimulates the secondary sex characteristics not of the same sex but of the opposite sex. Thus in women are seen male hair distribution (bearded women), deep voice, amenorrhea, atrophic breasts, atrophic genitalia with elongated penis-like clitoris (pseudohermaphroditism), in men a female type of obesity, breast hypertrophy with milk secretion, atrophy of testes, and absence of libido.

The adrenal sex hormone, therefore, is distinctly different from the pituitary sex hormone which stimulates the gonads and from the gonadal hormones, which stimulate the secondary sex characteristics of the same sex.

In the present paper we describe a case of suprarenal virilism in a woman who was closely studied clinically, physiologically and histologically. It is believed that some facts of interest were found that may clarify this syndrome more definitely and may be helpful in recognizing similar clinical manifestations.

REPORT OF CASE

History.—Miss M. G., aged 15, admitted to the Michael Reese Hospital service of Dr. M. L. Parker June 16, 1935, had never been sick before. The menses started at the age of 12, were regular and were of four weeks interval. The family history was insignificant. About one year before there was sudden onset of amenorrhea, a gain in weight of 30 pounds (136 kg.) growth of hair on the face, extremities and abdomen and a deepening of the voice. No pains or discomfort

were felt at any time. The patient and her parents were alarmed about her condition which apparently was progressing progressively worse.

Examination (abbreviated).—The patient was obese, the obesity being confined mainly to the trunk and face, the extremities being comparatively free. There were no abdominal striae, the skin was dry. There was considerable hypertrichosis, involving the cheeks, the upper and lower lip, the chin and the extremities; there was less hair growth on the abdomen and chest and there was virile distribution of hair. The breasts were small and atrophic. The external genitalia were of normal appearance, the clitoris was small, not hypertrophic. On rectal examination no mass was palpable, the internal genital organs were apparently normal. Physical examination otherwise revealed perfectly normal conditions. The blood pressure varied from 110 to 130 systolic, 70 diastolic.

Laboratory Examination.—The urine, blood count and blood chemistry were normal. X-ray plates of the skull (sella) and a pyelogram showed no pathologic condition. Eye examination and visual field determinations were normal. Quantitative titration of the urine for gonadotropic substance revealed its absence in amounts exceeding 66 mouse units per liter. The method used was Zondek's alcohol precipitation method.² Estrogenic substance was found very markedly increased. A positive Allen-Doisy smear was obtained with 2 cc of urine in forty-eight hours, indicating the excretion of 5,000 mouse units per liter.



Fig. 1.—Girdle obesity and hirsutism.

The diagnosis rested between Cushing's pituitary basophilism, adrenogenital syndrome, and arrhenoblastoma of the ovary. Because of the absence of the cardinal symptoms of Cushing's disease, such as hypertension, hyperglycemia, hyperglobulia, osteoporosis, negative x-ray appearance of sella and negative eye observations, the possibility of either an adrenal cortex hyperplasia or tumor, or an arrhenoblastoma of the ovary was considered. Both conditions are known to give rise to the marked heterosexual changes; our case offered. Operation was suggested because of the continuous progression of symptoms and because of the possibility of an early malignant condition.

Operation (Dr. Parker).—July 21, a midline subumbilical incision was made. Exploration of the pelvis revealed a normally appearing uterus and normal tubes. The ovaries were of average size, the right somewhat larger than the left. In the right ovary three pin-head sized cysts were visible. The ovary was therefore removed. Palpation of both kidneys showed them to be of normal size and consistency. Both adrenal glands were examined carefully by palpation. No enlargements, swellings, tumors or cysts were detected. The appendix showed evidence of chronic inflammation and was removed. The abdomen was closed in layers without drainage.

Histologic Examination (Dr. Otto Saphir).—Sections of the ovary revealed multiple apparently degenerated primordial follicles in the peripheral portions of the cortex and in the deeper layers follicles in various stages of maturation. Multiple cystic spaces were noted. Some of these contained eosinophilic amorphous debris and were lined by granular cells. Others were empty, their lining undulated and apparently formed by a vascularized theca layer. Corpora alluciantia were fairly numerous. In hyalinized fibrous connective tissue at the periphery of one section was a circumscribed nest of cells that resembled the cortical cells of the adrenal. These cells had clear vacuolated or finely granular eosinophilic cytoplasm. Delicate chromatin granules were diffusely distributed throughout the oval nuclei, some of which contained one or two large

From the medical and surgical departments of the Michael Reese Hospital.

1 Goldzieher M. A. and Koster Harry. Adrenal Cortical Hyperfunction. *Am. J. Surg.* 27: 93 (Jan.) 1935. Walters, Waltman, Wilder R. M. and Kepler E. J. Suprarenal Cortical Syndrome with Presentation of Ten Cases. *Ann. Surg.* 100: 670 (Oct.) 1934. Leshner F. G. A Comparison of the Pituitary Basophilic Syndrome and the Adrenal Adrenogenital Syndrome. *Quart. J. Med.* 4: 23 (Jan.) 1935. Bauer J. Der Einfluss der Nebennieren und Hypophyse auf Blutdruckregulation und Umstimmung der Geschlechtscharaktere beim Menschen. *Klin. Wchnschr.* 14: 361 (March 10) 1932.

2 Zondek, Bernhard. *Die Hormone des Ovarium und ihre physiologischen Vorgänge.* Berlin: Julius Springer, 1931.

granules. The nuclear membranes were well defined, the cytoplasmic membranes clear, and the cells in immediate contact.

Course—The patient made an uneventful recovery. On the fourth day following the operation, menstruation commenced. The regular menstrual cycle was resumed and has continued since (ten months). There was a slight reduction in weight but no marked improvement of the hypertrichosis up to date. The increased estrogenic excretion disappeared. Four weeks after the operation, no vaginal cornification was obtained in castrated mice with the injection of as much as 6 cc. of urine within 100 hours.

COMMENT

The cardinal symptoms of the case described were sudden onset of amenorrhea, gain in weight, and hirsutism. These symptoms may well be ascribed to either one of the three conditions: (1) adrenal cortex hyperactivity, whether a benign adenoma, hyperplasia, or a malignant hypernephroma, (2) Cushing's pituitary basophilism, (3) certain types of ovarian tumors called by Robert Meyer³ arrhenoblastoma.

As to adrenal cortex disorder, it is well to remember the embryologic origin of this tissue. It is derived from the coelomic epithelium of the urogenital fold, which in later embryonic life divides into adrenal cortex and gonads. Adrenal cortex, ovaries and testes, therefore, derive from a common ancestry. This fact may well explain the heterosexual changes so frequently found in the adrenal-genital syndrome. It also explains the presence of aberrant adrenal cortical tissue anywhere along the original preformed urogenital "anlage." Indeed, such tissue has been found by Kolodny⁴ in the retroperitoneal space in a typical case of adrenal virilism, by Marchand⁵ in the ligamentum latum, and by

apparent that partial or total adrenalectomy in such cases, as has been advocated, will be futile as long as the causative tumor or tissue responsible for the symptoms has not been removed.

The danger of such procedures has been pointed out in a recent editorial in *THE JOURNAL*.⁶ The fact that our patient did not lose her hirsutism after operation leaves the possibility open that additional aberrant

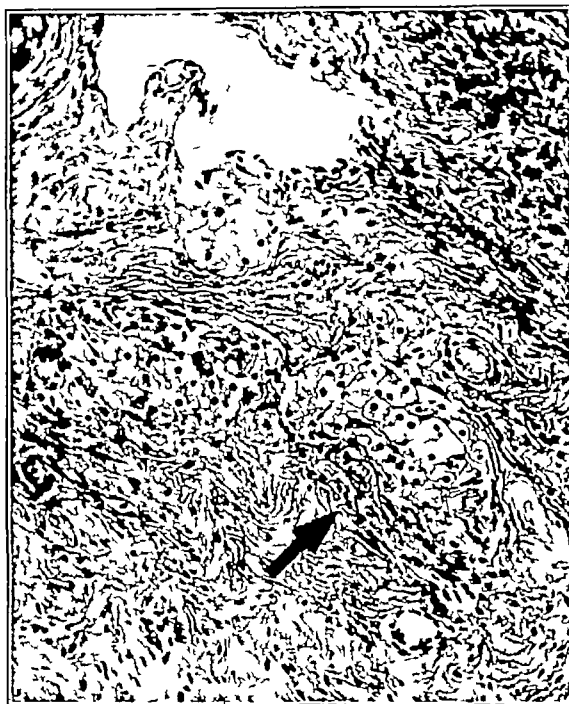


Fig. 3—Section of ovary containing nests of clear cells morphologically similar to cells of the adrenal cortex.



Fig. 2—Facial hypertrichosis

adrenal cortex tissue may be present in other locations or that there may have been some unrecognized disease in the adrenals.

Our case, furthermore, offers points of interest as to the differential diagnosis of Cushing's syndrome of pituitary basophilism. Although obesity, amenorrhea and hirsutism are considered symptoms pertinent to Cushing's disease, other features such as hypertension, hyperglycemia, hyperglobulia, osteoporosis and purple abdominal striae were missing. A negative roentgenogram of the sella apparently can be evaluated as little as a negative pnelogram.

The marked excretion of estrogenic substance found in our patient seems to be an important sign in favor of adrenal cortex disturbance. This phenomenon, discovered by Frank,⁷ may best be explained again by the common embryologic origin of both adrenal cortex and gonads. It may well be conceivable that the cells of the adrenal cortex may retain the faculty of producing gonadal hormones under pathologic conditions.

Because of the rarity of these conditions, titration of body fluids for gonadal and for gonadotropic substance has not yet been adequately undertaken in Cushing's disease and arrhenoblastoma of the ovary. It is to be hoped that further work along these lines will be helpful in analyzing such and similar clinical pictures, which heretofore offered grave difficulties in their diagnosis.

us within the ovary itself. It becomes clear, therefore, that the presence of seemingly normal adrenal glands which were palpated during operation does not rule out the diagnosis of suprarenal virilism. It also becomes

³ Meyer, Robert. Pathology of Some Special Ovarian Tumors and Their Relation to Sex Characteristics. *Am. J. Obst. & Gynec.* 22: 697 (Nov.) 1931.

⁴ Kolodny, Anatole. Suprarenal Virilism in a Woman. *J. A. M. A.* 102: 925 (March 24) 1934.

⁵ Marchand quoted by Kolodny.

⁶ In Defense of the Adrenals. editorial. *J. A. M. A.* 106: 294 (Jan. 25) 1936.

⁷ Frank, R. T. A Suggested Test for Functional Cortical Adrenal Tumor. *Proc. Soc. Exper. Biol. & Med.* 31: 1204 (June) 1934.

SUMMARY AND CONCLUSIONS

1 Adrenal virilism is the clinical manifestation of hyperactivity of the adrenal cortex gland

2 In a case of adrenal virilism the adrenals appeared to be normal, but aberrant adrenal cortex tissue was found within the ovary

3 Increased function of adrenal cortex seems associated with increased excretion of estrogenic substance

4 The clinical and physiologic manifestations of adrenal virilism may be explained on the basis of the embryologic origin of adrenal cortex

104 South Michigan Avenue—30 North Michigan Avenue.

THE TREATMENT OF LARGE PULMONARY ABSCESSSES

CLARENCE E. BIRD, M.D.
LOUISVILLE, KY

Four years ago my interest in the subject of large pulmonary abscesses was greatly stimulated when the question arose as to the advantages of draining a necrotic right upper lobe in the anterior axillary line instead of more posteriorly

CASE 1—A man, aged 32, a cook had been very ill with a rapidly progressing and destructive pneumonia. When first seen he was propped up in bed under an oxygen tent excited, dyspneic, pale perspiring and nauseated from the foul odor of sputum. Roentgenograms (fig 1) showed that the abscess was extensive, but fortunately the liquefying process had not perforated the oblique or horizontal fissures. In the semisitting position, in which the patient was most comfortable it was evident that drainage anteriorly would be most dependent. Under local anesthesia a section of the fifth rib was removed in the anterior axillary line and soft rubber tubes were placed on the indurated horizontal pleura. Within six weeks the discharge had ceased and the walls of the large cavity, when observed through a fore-oblique cystoscope were found to be granulating in a healthy manner, even far into the open bronchi. Removal of long segments of the first to the fifth ribs subperiosteally by a posterior approach resulted in obliteration of the space and rapid, complete and permanent healing of the sinus (fig 2). The patient remains well after four years.

Subsequently I have had the opportunity to treat twenty more patients with pulmonary abscesses by surgical methods. In order to present a well balanced picture of the disease as it occurred in the hospital as a whole, I have prepared a table to show the etiology of seventy cases admitted since July 1, 1932 (table 1). There were forty-six (65.7 per cent) in which the cause could not be ascribed to anything more definite than a "cold," "influenza" or "pneumonia." In twenty (28.6 per cent) the abscesses followed operations, infected traumatic wounds or other extrapulmonary infections. Two cases occurred after diabetic coma, one following alcoholic stupor, and another in a premature infant.

Table 2 shows the results in the seventy cases. Fourteen patients were too ill for treatment of any kind and died. Eleven left the hospital against advice, one is well, eight are improved and two are unimproved. Eighteen were treated in the medical and pediatric services, two are well, eleven are improved and five are dead. Of my twenty-one personal patients, ten are well (no cough or sputum, wounds soundly healed).

Because of limited space many of the illustrations shown by lantern slides at the meeting have been omitted.

From the Department of Surgery, Louisville City Hospital and the University of Louisville School of Medicine.

Read before the Section on Surgery General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

five are improved and six are dead. Six were treated in other surgical services, three are improved and three are dead.

The causes of death in my personal cases were as follows: in two, multiple abscesses with progressive pulmonary gangrene; in one, virulent empyema complicating pneumothorax, which occurred at the second stage of a two-stage drainage; in one, virulent empyema complicating pneumothorax, which occurred at the first stage of a proposed two-stage drainage; in one, virulent empyema in an old man, which occurred at the time of a one-stage drainage; and in one, hemolytic streptococcus septicemia, pericarditis and peritonitis following a two-stage lobectomy for chronic abscess.

As a result of these personal experiences good and bad, which parallel those described in the literature since the time of Murphy,¹ the following points in relation to the surgical treatment seem to me to be of the greatest importance:

1 Pulmonary tuberculosis, foreign body and tumor must be suspected in all cases and should be excluded by examinations of the sputum, bronchoscopy and biopsy of the pleura and lung.

2 Postural drainage should be avoided in patients who are very ill.²

3 Because of the danger of empyema, pyopneumothorax (with bronchopleural fistula and tension pneumothorax),



Fig. 1 (case 1)—Abscess of the right upper lobe drained through the fifth rib in the anterior axillary line. Thoracostomy by way of the fourth rib in the midclavicular line would have been preferable.

hemorrhage into the cavity, cerebral air embolism, or abscess of the chest wall, thoracostomy should not be done.

4 Patients with bronchopleural fistula and foul empyema secondary to lung abscess are more likely to recover with prompt open drainage than by repeated thoracostomy or catheter drainage with a water seal. In my experience, repeated aspirations have led to painful

debilitating phlegmons of the thoracic wall while catheter drainage has been followed shortly by infection and leakage about the catheter. Violent shifts of intra-pleural pressure occur if the tube becomes temporarily occluded.

5 Treatment by pneumothorax is dangerous except when the abscess is definitely so far removed from the periphery that it cannot possibly rupture into the pleural cavity.

6 Patients should not be operated on as a rule while there is pain. The pain indicates pleural inflammation, frequently with extension of a pneumonic process. The operation will be safer later.

7 With very few exceptions, surgical treatment should not be instituted within six weeks after the onset of the disease.

¹ Murphy, J. B. Surgery of the Lung. J. A. M. A. 31:231, 1898.
² Bruhn, Harold. Lung Abscess. J. A. M. A. 103:197, 1934 (Dec. 29).

8 However, constant cough with nausea, anorexia and insomnia, accompanied as they are by rapid loss of weight and strength, may in themselves indicate the necessity for prompt surgical drainage.³

9 In patients who fail to improve by nonsurgical therapy, surgical drainage should be carried out soon after the end of the six weeks period. Many complications are thus avoided and fibrosis and bronchiectasis are minimized.

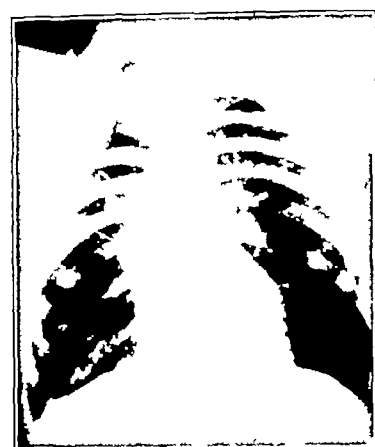


Fig 2 (case 1)—A limited extrapleural thoracoplasty performed nine weeks after the abscess was drained obliterated the cavity and closed the sinus.

10 Operations for pulmonary abscess should be conducted under local anesthesia.

11 Small abscesses should always be drained by the two-stage method, and many large abscesses should be opened in this manner.

(In one of my cases a hemostat, carelessly placed, opened the normal pleura near an abscess that was adherent over only a small area. Pneumothorax, foul empyema and death resulted.)

12 Many of the larger abscesses should be drained by the two-stage method but when the pleural surfaces are involved over a wide area and the patient is very ill the preliminary stage should be dispensed with.

13 Drainage should be so planned that it will be dependent. This requires an accurate localization of the lowermost limits of the liquefaction and a knowledge of the confines of the lobes in relation to the thoracic wall.

TABLE 1—*Etiology in Seventy Cases of Pulmonary Abscess*

	Number	Per Cent
Colds " influenza pneumonia	46	65.7
Following operations infected traumatic wounds and all extrapulmonary infections	20	28.6
Following diabetic coma alcoholic intoxication prematurity	4	5.7
Total	70	100.0

14 The best and most permanent results are secured when dependent drainage is maintained under constant supervision, preferably in the hospital until the cavity is entirely healed. Excessive fibrosis, bronchiectasis, chronicity and recurrence are thus avoided.

In fifteen of my twenty-one cases, more than half of one or more lobes was involved. For my purposes in this paper, destruction of this extent defines roughly the large pulmonary abscesses.

The matter of long continued dependent drainage for large abscesses is of such importance that I have chosen to utilize most of my time to emphasize the point. Even with small abscesses of the right upper lobe, an anterior approach is the only logical one (fig 3A). Posterior drainage is difficult and ineffective for this lobe. Midaxillary drainage, unless placed high, requires the traversing of a portion of the uninvolved lower

lobe and the interlobar pleura and increases the length of the drainage tract. Furthermore, drainage by that route often does not permit the opening of the lowermost portion of the lobe. The sites of drainage that are recommended for right upper lobes of the usual size are the fourth or fifth ribs in the anterior axillary line or the third or fourth ribs in the midclavicular line. When the lobe is very small, drainage should be made occasionally as high as the second rib in the midclavicular line. Wherever the horizontal interlobar pleura may lie, an accurate determination of the posi-

TABLE 2—*Results in Seventy Cases of Pulmonary Abscess*

	Well	Im proved	Unlm proved	Dead	Total
Too ill for treatment of any kind	0	0	0	14	14
Left the hospital against advice	1	8	2	0	11
Treated in medical and pediatric services	2	11	0	5	18
Personal cases all surgical	10	5	0	0	21
	(47.6%)			(28.6%)	
Other surgical cases	0	3	0	3	6
Totals	13	27	2	23	70

tion and direction of its slope can usually be made by fluoroscopy and x-ray examination. Of course it is not uncommon for an abscess to perforate the interlobar pleura. Drainage must then be made through the ribs that overlie the most dependent portion of the involvement. Thus an upper lobe abscess may be drained through the lower lobe.

Experiences with large abscesses in the left upper lobe have convinced me that there also the anterior route is correct. The following case describes the troublesome course of a patient in whom the usual midaxillary approach was utilized.

CASE 2—A stableman aged 40, came to me in a precarious condition three weeks after the onset of pneumonia. Stereoscopic films of the chest showed multilocular abscess cavities with fluid levels in the upper portion of the left root area and in the left upper lobe extending to the periphery (fig 4). Three centimeters of the fifth rib was removed in the mid-axillary line. This route of drainage led through an inflammatory zone in the upper lateral portion of the left lower lobe and forced traversing the thickened oblique pleura before entering the cavity of the abscess. The fever and expectoration



Fig 3—A the sites suitable for the drainage of most abscesses of the right upper lobe are shown by the ribs numbered in the anterior axillary and midclavicular lines. B drainage of the left upper lobe should begin at the third rib in the midclavicular line. C the sites for opening the middle lobe are the fifth and sixth ribs lateral to the costochondral junction.

subsided but the drainage was incomplete. Furthermore, the patient had been subjected to the possibility of an acute empyema in the lower portion of the thorax. Thereafter it was necessary to drain anteriorly through the second third and fourth ribs in the midclavicular line and to carry out an extensive multistage thoracoplasty in order to cure the patient (figs 5 and 6). The entire treatment extended over a period of eight months.

In striking contrast to the long hazardous convalescence in the case just discussed was the short and uncomplicated recovery in case 3

CASE 3—A mill operator, aged 28, had extensive destruction of the left upper lobe resulting from pneumonia. A lateral film showed the process confined to the left upper lobe and suggested the appropriateness of anterior drainage. This was carried out by excising a segment of the third rib in the mid-clavicular line and led

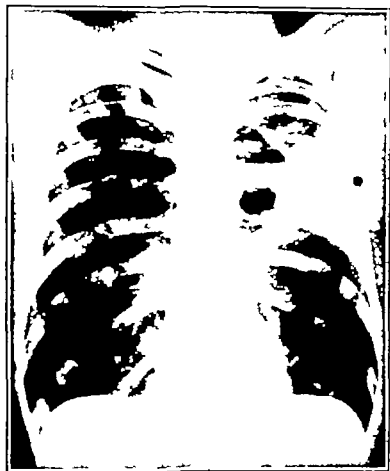


Fig. 4 (case 2)—A multilocular abscess in the left upper lobe. The lobe is destroyed almost completely. The black dot lies over the fifth rib in the midaxillary line where drainage was established improperly

little iodized oil entered the bronchial tree. The sinus closed promptly six and one-half weeks following the thoracostomy

The site of primary drainage that is recommended for these large abscesses of the left upper lobe is the third rib in the midclavicular line (fig 3B). The third rib is chosen rather than the fourth or fifth, because it lies over a safe zone well away from the pericardium. Having once entered the lung, if the process extends lower, one can remove segments of the fourth, fifth or even sixth or seventh ribs under guidance of the finger in order to drain the lingual portion of the lobe.

The middle lobe is not often affected except in conjunction with the upper or lower lobes and in abscesses at the root of the lung. The proper approach is through the fifth or sixth ribs lateral to the costochondral junction (fig 3C). This route avoids the pericardium and prevents chondritis. Carried more deeply, the approach provides excellent drainage for abscesses at the right root.

For the lower lobes (fig 7A), with the patient in a position approaching the upright and turned somewhat toward the affected side, dependent drainage is obtained by thoracostomy anywhere along the lowermost borders. Thus, on either the right or the left side if the liquefaction is shown by physical examination, fluoroscopy and films to be greatest posteriorly, portions of the tenth and eleventh ribs are removed over the paravertebral gutter, or less often a segment of the tenth rib is excised below the angle of the scapula. If the liquefaction is most extensive laterally or anteriorly, the proper sites of drainage for the left lower lobe are through the bed of the ninth rib in the midaxillary line (fig 7B), the eighth rib in the anterior axillary line or the seventh or sixth ribs still more anteriorly in the midclavicular line. On the right side (fig 7C), because of the interposition of the middle lobe drainage of the most anterior portion of the lower lobe is carried out as a rule, through the bed of the ninth rib in the mid-

axillary line or the eighth rib in the anterior axillary line. But for the lower lobes, as for the upper there are large individual and age variations in the relationships of the ribs to the lobes, so that in each case the proper ribs for excision must be determined by fluoroscopy and x-ray examination in order to obtain the best dependent drainage.

If drainage is established at these dependent portions of the lower lobes, healing will usually occur eventually without thoracoplasty even when there is extensive destruction of pulmonary tissue. The structure particularly the diaphragm and the heart are more mobile than those surrounding the upper lobes and tend to obliterate the dead space, so that thoracoplasties over the lower lobes are necessary less often than over the upper lobes.

CASE 4—In a grocery clerk, aged 36, whose abscess complicated bilateral bronchopneumonia, closure of a large abscess occurred without a thoracoplasty. Three centimeters of the right ninth and tenth ribs were resected below the angle of the scapula. The thickened pleura and a thin shell of consolidated lung were traversed and the offensive pus and necrotic pulmonary tissue were removed directly above the diaphragm. After the patient had regained his strength, the right phrenic nerve was crushed. Repeated observations of the cavity by the cystoscope through the sinus tract showed the casting off of the sloughing masses, the gradual expansion of the remain-



Fig. 5 (case 2)—The patient eight months later subsequently to effective anterior drainage and an extensive thoracoplasty

ing pulmonary tissue the rise of the diaphragm the formation of clean granulations and the contracture of scar tissue which pulled the parietal and visceral walls of the cavity together gradually. Iodized oil injected into the sinus tract seven weeks after operation showed reduction in the size of the cavity and two or three remaining communications with the bronchial tree. Thereafter the space closed progressively and healing was complete and permanent six weeks later. A roentgenogram taken one year after operation showed the diaphragm fixed at a high level.

CASE 5—However, in a girl, aged 17, whose infection caused gangrene in an atelectatic, pneumonic left lower lobe obliteration of the cavity failed to occur. Dependent drainage was obtained by the removal of a segment of the tenth rib below the angle of the scapula. The convalescence was extremely hazardous and the foul discharge from the sloughing surfaces did not cease entirely for three months. The result was a firmly fixed, fibrosed lung, perforated by many open bronchial fistulas. The diaphragm and pericardium were immobilized

by scar tissue. The size and situation of the cavity and the communications with the bronchial tree were demonstrated in films made after the injection of iodized oil. There seemed to be no possibility that nature would close this space within a reasonable time. When observations through a cystoscope showed the tissues to be healthy, a regional thoracoplasty was performed in which segments of the sixth to the ninth rib 11 cm long were excised thus collapsing the roof. The sinus closed immediately and a film taken sixteen months later showed only fibrosis and regenerated ribs. This patient remains well three years after her illness.



Fig 6 (case 2)—The obliterated left upper lobe

CASE 6—A Negress, aged 36, did not do as well because, I think, the large posterior abscess of the left lower lobe was drained at too high a level. The sites of drainage were those recommended, but the diaphragm was exceptionally low and this feature was not taken sufficiently into account. The history suggested a complication of pneumonia which she had had two months previously. Bronchoscopy showed no foreign body. A segment of the tenth rib was excised below the angle of the scapula. Multilocular cavities in a dense atelectatic lung were found and drained, leaving large wide open bronchial fistulas. At a second operation one month later the wound was enlarged and the vertebral portions of the tenth and eleventh ribs were removed. Still the diaphragm had not been reached. Three months later the patient continued to raise a moderate amount of sputum, and the honeycombed lung was actively suppurating. A long segment of the ninth rib was resected to provide wide exposure, and a large mass of the consolidated chronically infected lung was removed with the endotherm. At the same time the diaphragm was paralyzed. The suppuration continued and from this time on the patient refused further operations. I have followed her with interest for the ten months since that time. After four months the output of sputum decreased to zero and she began to gain weight and strength. However, she has continued to require daily dressings. The cavity extends upward paravertebrally for about 6 cm. Everywhere above the diaphragmatic portion it is perfectly free from suppuration but with each cough pus exudes from the lowermost bronchi. In order to effect a cure it will be necessary to remove the remaining rim of suppurating lung which lies against the diaphragm below the level of the wound.

When there is pneumonitis surrounding an abscess, the limits of the disease are often difficult to determine, but by draining dependently within the limits of pleural involvement, provision is made for the liquefaction of portions of the lung that may not as yet be definitely involved. When open drainage is made for a small abscess the site of the operation must be determined to a great extent by the position of the lesion but it is frequently possible to place the opening near one of the sites of drainage that are preferable for large abscesses.

As a rule, abscesses at the root of the lung which do not involve any one lobe and which require open drainage are best approached either anteriorly or posteriorly low in the chest by two-stage drainage. However, a large chronic abscess centrally placed but involving definitely a single lobe may be treated by lobectomy without preliminary external drainage. This plan of treatment was followed in case 7.

CASE 7—A Negro girl aged 22, had a postpneumonic, centrally placed abscess of the right lower lobe of one year's duration which failed to respond to treatment by bronchoscopic aspiration, pneumothorax and paralysis of the diaphragm. Following a preliminary pneumolysis and the production of adhesions over the upper and middle lobes, the lower lobe was removed by dissection. A film taken four months later showed that the heart, diaphragm and other lobes had obliterated the dead space.

SUMMARY

Attention has been directed to fourteen points that I consider to be of the greatest importance in relation to the surgical treatment of pulmonary abscesses.

Emphasis is placed on long continued, dependent drainage, under hospital care, until the cavity of the abscess is entirely obliterated. Fibrosis, bronchiectasis, chronicity and recurrences are thus avoided. During these periods of hospitalization it is interesting and instructive to observe the healing cavities repeatedly through an ordinary fore-oblique cystoscope passed through the wound of operation.

For most cases the ideal sites of drainage for large abscesses are, for the right upper lobe, the third or fourth rib in the midclavicular line, for the middle lobe, the fifth or sixth rib lateral to the costochondral junction, for the left upper lobe, the third rib in the midclavicular line lateral to the pericardium, with removal of lower ribs under direct guidance of the finger if necessary, for the lower lobes posteriorly and laterally, the tenth and eleventh ribs over the paravertebral gutter, or the tenth rib below the angle of the scapula or the ninth rib in the midaxillary line, for the left lower lobe anteriorly, the eighth rib in the

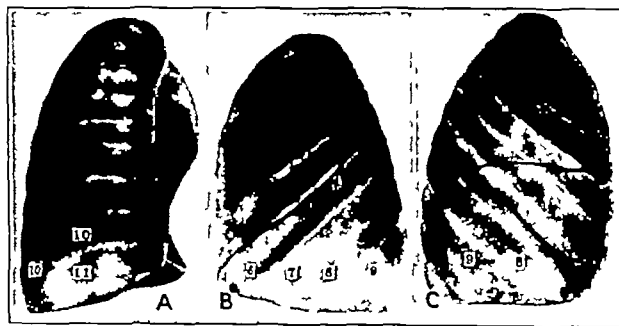


Fig 7—A large abscesses, which are placed posteriorly in the lower lobes, are drained through the tenth and eleventh ribs over the paravertebral gutter occasionally even lower. B when the greatest destruction is in the lateral or anterior portion of the left lower lobe thoracostomy is established through the ninth, eighth, seventh or sixth ribs between the midaxillary and midclavicular lines. C on the right side large abscesses of the lower lobe that involve the lateral and anterior portions are drained through the ninth rib in the midaxillary line or the eighth rib in the anterior axillary line.

anterior axillary line or the seventh and sixth ribs in the midclavicular line, for the right lower lobe anteriorly, the eighth rib in the anterior axillary line. There are individual and age variations, and elevation of the diaphragm due to atelectasis and fibrosis must be taken into consideration when the site of drainage for chronic abscesses is chosen.

Among my twenty-one patients with pulmonary abscess treated surgically during the past four years, ten are well, five are improved and six are dead. This mortality rate of 28.6 per cent should be improved.

ABSTRACT OF DISCUSSION

DR. ALFRED BLALOCK, Nashville, Tenn. It is important to realize that there are marked variations in the clinical course and in the pathologic changes caused by lung abscesses. Some patients recover spontaneously; others do not respond favorably to any treatment. Each case is a problem in itself. One of the most important points connected with the treatment of a lung abscess consists in determining when the more conservative methods should be abandoned and when surgical drainage should be used. The trend at the present time appears to be toward earlier operation. This has the advantage of lessening the likelihood of the development of bronchiectasis and of the late complications associated with abscesses. On the other hand, if one operates too early, one is forced to open through an area of edematous lung with poor resistance to infection. This is likely to result in an extension of the infection. Operation should be postponed until there is a well developed delimiting pyogenic membrane. In general, it is better to wait at least six weeks following the onset before attempting drainage and it is probably wiser to extend this period to three months. The two important points in the operative technic are dependent drainage and the entrance into the cavity with as little damage to normal pulmonary tissue as possible. Dr. Bird has pointed out that there are large individual and age variations in the relationships of the ribs to the lobes and that in each case the proper ribs to be resected should be determined by fluoroscopy and x-ray examinations. It is generally stated that it is important to determine if possible whether or not there are adhesions between the two pleural surfaces at the proposed site of drainage. This has probably been overemphasized, since it is usually safer, even in the presence of adhesions, to perform the drainage in two stages. Extremely important is an ample opening in the chest wall so as to avoid working in the dark and so that the entire superficial area of the abscess may be within reach. If it is found that the incision is not ideally located for drainage, it should be enlarged at once. If heavy muscles overlie the cavity, they should be divided at right angles. At least one and usually several ribs including the periosteum should be resected. The cavity should be as completely deeroofed as seems feasible, with an attempt always to have the external part of the opening larger than the more internal portion. The drainage of pulmonary infections differs from that of abscess in most parts of the body in the desirability for free access to the entire cavity in order that possible bleeding points may be visualized and connections with neighboring pockets of pus may be enlarged. One of the distressing complications that I have encountered far too frequently is air embolism. Usually this has not resulted fatally. With further improvements in the technic of lobectomy, it is entirely possible that this procedure will largely replace that of surgical drainage.

DR. PETER B. SALATICH, New Orleans. All know how dangerous these abscesses of the lung are. I had some experience especially during the influenza epidemic with the use of vaccines. The effect is gratifying, not so much in large abscesses but in smaller ones. I do not mean the use of vaccine as recommended by the manufacturers in small doses. I commence the treatment with 0.25 cc. and rapidly increase the dose. The next day I give 0.5 cc. If no reaction takes place I give 1 cc., then 2 cc. and up to 5 cc. When 5 cc. is reached I repeat the dose every second or third day. I have had the opportunity of observing these cases with the x-ray every two or three days and I find that these abscesses disappear under the vaccine therapy with no other form of treatment.

DR. CLARENCE E. BIRD, Louisville, Ky. I have had no experience in the use of vaccines in the treatment of pulmonary abscesses and am unable to comment on the advisability of their use. I should judge, however, that the use of vaccines would be one of those measures which might be tried together with bronchoscopic drainage, adequate bed rest and other types of careful medical treatment for a period, until it is found that the patient either does or does not improve.

RÔLE OF SYPHILIS OF THE NERVOUS SYSTEM IN THE PRODUCTION OF MENTAL DISEASE

A SURVEY OF THE VARIOUS FORMS OF NEURO-SYPHILIS OCCURRING AT THE BOSTON PSYCHOPATHIC HOSPITAL FROM 1912 TO 1934

MERRILL MOORE, M.D.

AND

H. HOUSTON MERRITT, M.D.

BOSTON

Accurate statements with regard to the role of syphilis in the production of mental disease are rare in medical literature. The figures cited by Krapelin and Lange¹ refer only to dementia paralytica and were collected mainly in the days before the common use of the Wassermann reaction. For this reason it has been thought advisable to survey the records of all admissions to the Boston Psychopathic Hospital since its opening in June 1912 in order to determine what role syphilis played in the production of mental disorder among patients observed there. The records of the Boston Psychopathic Hospital are particularly suited for such analysis because this hospital is an important and active center for diagnosis and the material that passes through it represents a cross section of mental diseases as they occur in the community at large. In addition there is relatively little selection in the patients

TABLE 1—Correction of Original Figure of Admissions

Total admissions for years 1912 to 1934	40,845
Less readmissions (19.3% of 40,848)	7,854
Total first admissions	32,991
Less those diagnosed without psychosis	6,227
Total first admissions with psychosis	26,764

* 19.8 per cent of 32,964

who are brought there for observation and for the great majority of them admission to the Boston Psychopathic Hospital constitutes the first hospitalization in the course of their mental disturbance.

The total admissions to the Boston Psychopathic Hospital from June 24, 1912, to August 1, 1934, were 40,848. An analysis of the hospital's diagnosis files showed that 2,832 of these 40,848 were found to be suffering from some form of syphilis of the nervous system. This figure represents 2,832 different patients since each of them was analyzed individually and all readmissions were excluded. The diagnosis in these 2,832 patients was based on the observations on neurologic examination in conjunction with the results of examination of the cerebrospinal fluid obtained by lumbar puncture. Since lumbar puncture is not performed as a routine in every case admitted, and since it is well known that active syphilis of the central nervous system can exist and produce mental symptoms without objective signs on neurologic examination, there are undoubtedly a certain number of cases in which a syphilitic infection of the central nervous system was present but not detected.

In determining the role of syphilis as a cause of mental disease it was necessary to determine the actual

We are indebted to Mr. Sidney Levin for assistance in the preparation of this material.
From the Department of Diseases of the Nervous System, Harvard Medical School, the Boston Psychopathic Hospital and the Neurologic Unit of the Boston City Hospital.
¹ Krapelin, E. and Lange, J. *Psychiatrie*, Leipzig, J. F. Bergmann, 1922.

number of patients admitted to the Boston Psychopathic Hospital with a diagnosis of mental disease. In order to arrive at this figure it was necessary to exclude from the 40,848 admissions all readmissions as well as all patients who were diagnosed as "without psychosis." Similarly, it was necessary to exclude from the 2,832 patients with neurosyphilis those who were diagnosed as "without psychosis" and those in whom the psychosis was considered to be unrelated to the syphilitic infection of the nervous system.

TABLE 2—Classification of the 364 Patients with Neurosyphilis in Whom Syphilis of the Nervous System Did Not Produce Mental Disease *

Type of Mental Disorder	Tabes Dorsalis	Meningo-vascular Neurosyphilis	Undifferentiated Types of Neurosyphilis	Totals
Symptomatic psychoses	0	2	6	8
Psychoses due to organic brain disease other than neurosyphilis	2	2	5	9
Psychoses due to exogenous toxins	0	0	1	1
Affective psychoses	0	0	4	4
Schizophrenic psychoses	0	2	7	9
Conditions of mental defect	0	3	10	13
Conditions of mental instability	1	2	6	9
Without psychosis	2	101	138	311
Totals	75	112	177	364

* The sex distribution in this group of cases of neurosyphilis is as follows: 237 or 65 per cent male* and 127 or 35 per cent females.

It was not possible to arrive at an absolutely accurate figure with regard to the corrections for the total admissions for the entire period of this study, since statistics are obtainable only since 1928.² For the seven year period 1928 to 1934, readmissions constituted 19.3 per cent of the total admissions. Patients diagnosed "without psychosis" constituted 19.8 per cent of the first admissions. We are of the opinion that the figures for these seven years give a fairly representative picture and can be used for the entire period of this study. The result of correction of the original figure of 40,848 for these two factors is given in table 1.

The diagnosis of syphilis of the central nervous system was made in 2,832 of these patients, subdivided as follows: dementia paralytica 2,251 patients, meningovascular neurosyphilis, 250, undifferentiated

The 2,468 patients in whom the syphilitic infection of the nervous system was the cause of their psychosis were divided as in table 3.

Table 3 shows that dementia paralytica and the tabetic form of dementia paralytica constitute by far the great majority (approximately 94 per cent) of the patients with mental disease due to neurosyphilis and that other forms of neurosyphilis played a very minor rôle in the production of mental disease.

Therefore, if 26,437 represents the actual number of first admissions of psychotic patients and 2,468 the number in whom syphilis of the nervous system was the cause of the psychosis, then syphilis of the nervous system is found to be the cause of the mental disease in 9.3 per cent.

SUMMARY

1 Syphilis of the central nervous system was considered as the cause of the mental disease in 2,468 patients admitted to the Boston Psychopathic Hospital in the first twenty-two years of its existence—from 1912 to 1934.

2 When corrections are made in the total admissions for the number of patients who were found to be "not psychotic" and for the number of readmissions, syphilis of the nervous system was considered the cause of mental disease in 9.3 per cent of the total.

3 Dementia paralytica and the tabetic form of dementia paralytica constituted 94 per cent of the 2,468 cases of mental disease due to syphilis of the central nervous system.

384 Commonwealth Avenue.

INTERNAL HERNIA FOLLOWING ROUND LIGAMENT SUSPENSION

REPORT OF TWO CASES

M. A. MICHAEL, MD
PHILADELPHIA

In describing the ventral suspension operation for retroversion such as the Gilliam, Olshausen or the Graves modification of the latter, Graves,¹ Crossan² and Miller³ all call attention to the danger of intestinal obstruction from internal herniation following this type of suspension but feel that the occurrence of this sequel is exaggerated. In the original Gilliam operation the round ligaments are brought by a perforating clamp through the peritoneum, muscle and fascia and fastened to the outer side of the fascia. In the Simpson modification of the Gilliam operation the round ligaments are brought through the peritoneum to the internal ring and make intestinal complications less likely. In either the Gilliam or the Olshausen operation there is created a potential hernial ring between the point of attachment of the round ligament to the peritoneum and its exit by way of the internal ring to the inguinal canal. Under this arch a loop of intestine can easily fall and become obstructed. Crossan suggests avoiding this complication by using the puckering suture of Ferguson to obliterate the space created between the distal portion of the round ligament and the abdominal wall.

In searching the literature on intestinal obstruction following round ligament suspension, one finds that

¹ Graves W. P. Gynecology (Operation for Retroversion p. 803) Philadelphia W. B. Saunders Company 1928.

² Crossan A. S. Operative Gynecology St. Louis C. V. Mosby Company 1920.

³ Miller C. J. Retrodisplacements in Davis C. H. Gynecology and Obstetrics vol. 11 p. 831.

TABLE 3—Cause of Psychosis in 2,468 Patients

	Patients	Per Cent
Dementia paralytica	2,251	91.2
Tabetic form of dementia paralytica	66	2.7
Meningovascular neurosyphilis	138	5.6
Undifferentiated neurosyphilis	13	0.5
	2,468	100.0

types of neurosyphilis, 190, tabes dorsalis, seventy-five, and the tabetic form of dementia paralytica sixty-six.

It is necessary now to exclude from these 2,832 patients with neurosyphilis 311 who were diagnosed as "without psychosis" and fifty-three in whom the psychosis was considered to be unrelated to the syphilitic infection of the nervous system, giving a total of 364 patients, as shown in table 2. When the 364 (table 2) are excluded from the 2,832 patients with neurosyphilis, there remain 2,468 in whom the syphilitic infection of the nervous system was considered as the primary etiologic factor in the production of the mental disease.

² These figures are furnished by Dr. Neil A. Dayton, director of the Division of Statistics and Research Department of Mental Diseases, Commonwealth of Massachusetts.

there is a sparsity of reports, this might be due to the fact either that the condition occurs infrequently or that it has not been always reported. Though cases of internal hernia are not uncommon, here one is usually dealing with herniation into one of the various intra-abdominal fossae. McIver⁴ studied the cases of acute intestinal obstruction occurring at the Massachusetts General Hospital from 1918 to 1927 and out of forty-five cases of late postoperative obstruction eight followed pelvic operations, but the type of operation was not mentioned. In a larger series of cases McIver⁵ found internal hernia to comprise only 0.9 per cent of 335 cases.

In 1924 Pidcock⁶ reported a case of intestinal obstruction in which the round ligament acted as the obstructing band but there was no previous operative procedure, the patient was about fourteen days post partum.

Petersen⁷ of Denmark reported one case similar to those to be reported here, following anterior round ligament suspension of the Gilliam type. In Petersen's case a loop of small intestine was caught between the left round ligament and the uterus. Resection of the bowel was necessary and the patient made an uneventful recovery. Among 256 such suspension operations in Denmark from 1920 to 1925, Petersen found that two cases of obstruction had occurred. He recommended the Webster type of operation as a safer procedure.

However, Pemberton and Sager⁸ reported two cases in 1929 following the Webster-Baldy type of suspension for retroversion. In these cases the herniation was through the aperture created in the broad ligament through which the round ligaments are introduced. Webster in his original description mentions this as a possibility and recommends suturing these openings in the broad ligament to the round ligament.

Searle⁹ reported a case of obstruction following a ventral fixation operation (not round ligament suspension), in which the uterus was sutured to the anterior abdominal wall.

Many cases of herniation through abnormal openings or fenestrae in the broad ligament have been reported, but the round ligament was not a factor in any of these cases.

Two cases of intestinal obstruction following round ligament suspension have occurred in the service of Dr. F. B. Block at the Jewish Hospital during the past year and will now be reported.

REPORT OF CASES

CASE 1—A C., a white woman, aged 38, well developed and well nourished, admitted to the Jewish Hospital Nov. 16, 1934, complained chiefly of abdominal pain. Four days before admission there was soreness of the abdomen; the bowel movements were normal until the day before admission, when she had her last bowel movement. On this day she experienced acute pain in the abdomen, generalized at first then more pronounced in the lower right quadrant. She was nauseated but did not vomit. The pain increased the next day, nausea and vomiting also occurred. The patient stated that she was well until a year

before, when she had an attack similar to the present one but it passed off in a few days. Five years before admission she had a uterine suspension operation. On admission her temperature was 98.2 F., pulse 70. On physical examination the patient was well nourished and complained of acute abdominal pain. No jaundice was present. Examination of the head, neck and chest was negative. The abdomen was flat and soft, no masses were palpable. Tenderness was present in the right lower quadrant and to a lesser degree in the left lower quadrant. The blood pressure was 120 systolic, 70 diastolic. The blood count revealed white blood cells 24,000, polymorphonuclears 90 per cent and lymphocytes 10 per cent. The urine was alkaline, with a specific gravity of 1.024, albumin was 4 plus with the acetic acid test. A flat x-ray film of the abdomen gave evidence of intestinal obstruction.

Under spinal anesthesia through a midline incision the abdomen was opened, a collapsed terminal ileum and distended jejunum were found. In the pelvis a knuckle of ileum was strangulated within the space created by the terminal portion of the broad ligament, the anterior abdominal wall and the left surface of the uterus (suspension operation site). The herniated bowel was freed, and the vessels leading to the ileum were found to be thrombosed, about 10 inches of gangrenous bowel was resected, and an end-to-end anastomosis was performed. Then an ileostomy proximal to the anastomosis was made and a No. 14 French catheter inserted. With the exception of a phlebitis of the left leg the patient made a fairly normal recovery and was discharged from the hospital December 1, twenty days after her operation.

Although not relevant to the present report, the patient returned to the hospital two days later with signs of intestinal obstruction, she was operated on and a loop of bowel was found adherent to the line of the former incision and obstructed. A lateral anastomosis was done around the obstruction, the loop being left in place. The patient left the hospital in two weeks and has been in good health since.

CASE 2—T. C., an Italian woman, aged 42, admitted to the service of Dr. Block, Oct. 27, 1935, complained of severe abdominal pain beginning at noon on the day of admission. She had been vomiting since the onset and seemed prostrated. Past medical history revealed that the patient had been until recently under treatment for syphilis. She had had an abdominal operation three years previously. On admission the physical examination showed temperature 97.3 F., pulse 88, blood pressure 170 systolic, 94 diastolic. Examination was essentially negative except for the abdomen, which showed tenderness in the left lower quadrant, peristalsis was practically normal. Under ether anesthesia through a midline incision the abdomen was opened and about 18 inches of dark red distended bowel was seen, a portion of which was locked between the right round ligament and the abdominal wall, resulting from a previous fixation operation. The round ligament was cut and each end ligated thus releasing the bowel, the color and tone of the latter having returned to a fairly normal condition, it was replaced and the abdomen closed. The patient made a normal recovery and was discharged November 11, thirteen days after operation.

SUMMARY

Many cases of internal hernia through the broad ligament, either postoperatively after the Webster-Baldy type of suspension or through fenestrae, have been reported.

Only three other cases of internal hernia following a round ligament suspension of the Gilliam type have been found reported in the literature, although the occurrence seems such a likely one.

Two cases of internal hernia following ventral round ligament suspension were seen in the service of Dr. Block. As a method of prevention when this type of suspension is done, it is the routine in Dr. Block's service that the space between the distal portion of the round ligament and the abdominal wall be obliterated by suturing these two structures together.

Clearview and Broad streets

⁴ McIver, M. A. Acute Intestinal Obstruction. *Arch. Surg.* 25: 1106 (Dec.) 1932.

⁵ McIver, M. A. Acute Intestinal Obstruction. *Am. J. Surg.* 10: 163-191 (Jan.) 1933.

⁶ Cited by Mas on J. C. and Atkinson, Walter. Hernias into the Broad Ligament, Proc. Staff Meet., Mayo Clin. 8: 293 (May 10) 1933.

⁷ Petersen, E. Occlusion intestinale aigue apres l'operation de Gilliam. *Acta obst. et gynec. Scandinav.* 6: 13-27, 1927.

⁸ Searle, W. A Commentary on the Operative Treatment of Prolapse with a Report of a Death from Intestinal Obstruction After Ventral Fixation, *J. Obst. & Gynec., Brit. Emp.* 41: 69-77 (Feb.) 1934.

FIBROSITIS

W S C COPEMAN, M.D., M.R.C.P

Honorary Secretary Committee on Chronic Rheumatic Diseases
of Royal College of Physicians
LONDON

Much of the medical activity of the present generation, more particularly I believe in America, has been occupied in discovering how to estimate numerically the results of scientific research, and in finding out what type of measurement it is profitable to make. In most branches of medicine centuries of accurate observation have brought the subject up to the point where numerical description has become fruitful.

The scientific study of the chronic rheumatic diseases however has not passed beyond the stage at which the work of a Linnaeus would be a fresh landmark. In the realms of our knowledge of etiology much soil is virgin. The real credentials of medical science however lie in its capacity to yield information which is a guide to prevention or to practical treatment, and such being the case the empirical investigation of theories and therapeutic agents must also be granted a legitimate place in this, and indeed in any, branch of medicine until such time as it shall with truth be described as an exact science. Fibrositis is the term given by Sir William Gowers, toward the end of the last century, to an inflammatory reaction of fibrous supporting tissue to extraneous poisons either toxic or bacterial. Stockman and Renton later described the typical lesion nodular or bandlike thickenings in the affected fibrous tissue, in the fascia lining the muscles or joints, or sometimes embedded in the substance of the muscles themselves. In the latter case they can only be felt when the muscles are in a state of relaxation after the passing of the acute attack.

Fibrositis may attack fibrous tissue wherever it is situated, and since such tissue may occur almost anywhere in the body the manifestations of this disease are protean. Roughly the situations in which it occurs with frequency may be thus classified:

- 1 Subcutaneous tissue—"panniculitis"—which will include the areolar and adipose tissue found in this situation. It will be seen in such cases that the skin loses its resilience and gets tied down to the connective tissue, dimpling like an orange skin when pinched. "Chilliness," a loss of tactile sensibility, a diminished response to faradic stimulation and suppression of sweating may also be found in this condition. Fatty tumors may sometimes form but are, as Stockman pointed out, only incidental to the main morbid process.

- 2 Intramuscular, which will include inflammation of the tissue that separates the fascial muscular planes ("myositis"), the lining of the bursae ("bursitis"), and the periarticular fibrous tissue ("capsulitis").

- 3 The fibrous sheaths of the chief nerve trunks, such as the sciatic or the brachial nerves ("interstitial neuritis").

Fibrositis in all these situations will be characterized by pain and limitation of movement, the pain being principally localized to the structures involved. Deformity will seldom result as is usual in the articular types of disease. Fibrositis is commonest in sites in which a combination of strain and chill occur most usually. This will tend to be in sites which are fairly superficial and where muscular planes merge into tendons or aponeuroses, since these portions of any

muscle both have a poorer blood supply and are less "elastic" than the more fleshy portions. Common situations are therefore the lumbar region (lumbago), the back of the neck, the shoulder, the scalp ("rheumatic headaches") and the elbow (certain forms of "tennis elbow"). Less common sites which will when affected often give rise to mistaken diagnosis are the attachment of the iliocostalis muscle to the lower six ribs, and the subcutaneous tissue of the precordial area. I have on several occasions been able to reverse a diagnosis of morbus cordis by discovering small tender nodules in this situation from which the pain has been found to radiate.

The pathology of the condition is necessarily somewhat vague, since the majority of sufferers will not consent to a biopsy of their nodules. A few examinations of this sort are however on record. The nodule, although typical of this condition from a clinical point of view, shows no typical pathologic structure. It is with difficulty dissected out, and when this has been accomplished the report of a histologic examination will generally be to the effect that inflamed scar tissue or "unhealthy" fibrous tissue, with no characteristic plan, is to be seen. Poynton also reported perivascular fibrosis. Their structure has not therefore the same appearance as that of the Aschoff nodules of acute rheumatism. The fibrous areolar tissue carries blood vessels and lymphatics to parts which are more functionally active but has itself a very limited blood supply. The result of this is that the lymphatics, being anatomically vulnerable to pressure, get considerably occluded during the process of scarring after the acute period is passed. The nutrient blood vessels are less vulnerable but can in most cases be seen to be thickened, while interstitial changes are also to be found in the nerve twigs locally. The modern tendency is thus to separate them entirely from the nodules of acute rheumatic fever. Whatever the actual etiology of fibrositis may be, the background will nearly always be found to reveal chronic fatigue or strain.

Clinically there appear to be two stages in most cases of fibrositis. 1 The stage of effusion, which may perhaps be likened to an internal form of urticaria. Where this is fairly superficial, a puffy swelling may be seen. 2 The stage of organization, during which the sero-fibrinous exudate gets partially absorbed, while the residue becomes invaded by fibroblasts, and a low grade fibrosis results forming intramuscular and interfascial adhesions and, later, palpable nodules. These nodules are not invariably painful to the touch unless a nerve twig is implicated, but it is noticeable that the severity of any case of (say) lumbago depends on the number and the extent of the nodules present, so far that the liability to relapse and to exacerbation is apparently directly proportional to these factors.

In addition to the pain associated with fibrositis, a further frequent complaint is of muscular stiffness, which generally persists even after the pain has disappeared. This stiffness is difficult to explain but is accounted for by some authorities as being due to the muscular hypertonus, which can be seen to exist in all acute cases. The muscles are unable to relax swiftly and completely and so the products of fatigue accumulate and the "habit" will persist even after the causative pain has been eliminated. Other authorities maintain that the cause is intramuscular adhesions, resulting from the period of exudation, which have to be stretched or absorbed before the affected muscles can resume normal function. Still other observers maintain

that this stiffness results from compression of the lymphatics, and so stasis in the muscular lymphatic drainage system

The most common forms of fibrositis are named according to their anatomic site, lumbago being perhaps the most typical form "Sciatica" may also be of fibrositic origin, although this form should always be distinguishable from a true sciatic neuritis. Among the points of distinction between the two types may be mentioned that when the fibrositic form is at fault the pain is referred to the hamstring muscles and not to the nerve trunk (which is not even tender until later). There will be no anesthesia or paresthesias in the area of the distribution of the nerve, and the ankle jerk will not be affected. The pain is less lancinating and radiating, the subjective sensation being rather one of local soreness, tenseness and muscular stiffness, which is aggravated by muscular action. Finally, if muscular relaxation can be obtained, but not otherwise, nodules will be detected.

The causation of fibrositis is still a matter for dispute. It would seem clear however that it either results directly from bacterial invasion of the tissues locally (toxic focus) or else is the result of the sensitization of the fibrous tissues to some group of toxins, which may be either of bacterial or metabolic origin ("allergy"). The bulk of the evidence suggests that the latter explanation is in the majority of cases the more correct one. It seems moreover that in this case the toxins are probably of a protein nature. If this explanation is the correct one it will clarify the traditional association between fibrositis and gout as well as the seasonal incidence, which has been noticed by Thompson and Gordon and others in fibrositis.

The late L. J. Llewellyn believed that the origins of fibrositis were intimately connected with a preexisting subthyroid state. He pointed out that in hypothyroidism the first symptoms were those of vasomotor and vasosecretor instability, for example, cold extremities, poor circulation, erratic sweating and often actual Raynaud phenomena. He stated moreover that in the majority of his cases he had confirmed the presence of either enlarged or shrunken thyroid glands. An association between most forms of rheumatic diseases and thyroid disorders earlier in life is certainly common in my experience, but careful control work will be necessary before this can be regarded as more than an occasional or contributing factor in this disease group. Ray suggested that in those cases in which direct focal infection is apparently causative the upper respiratory tract and teeth will account for localization of the disease to the upper portion of the body, while where the lower limbs and trunk are affected the causative factor may be found in the bowel. Stockman has also pointed out the frequent association between mucomembranous colitis and fibrositis.

It has been said in the past by those who object to the theory of allergic sensitization that if this should be the case it would be difficult to account for the selective action of the inflammation for fibrous tissue. It has long been realized however that the selection of specific tissue is actually a characteristic of a large number of diseases now believed to fall into this category.

TREATMENT

For the purposes of treatment, fibrositis might with advantage be divided somewhat as follows into three groups.

1 Primary fibrositis, the type which is being discussed in this paper

2 Symptomatic fibrositis, by which is meant fibrositis which merely indicates the presence of some more deep-seated lesion. Examples of this are encountered in cases of spondylitis ankylopoietica, rheumatoid (atrophic) arthritis, diabetes, and often trauma.

3 Senile fibrositis, which may be classified separately, since therapeutically I have found that the prognosis is very poor.

The modern tendency with injection treatment is toward measures aimed at desensitization rather than toward specific immunization, as was the fashion a few years ago. Success may therefore be found at both ends of the therapeutic scale, either by massive doses of protein or T. A. B., or else by minute doses of polyvalent vaccines, as advocated by Crowe. The former method however is apt to produce unpleasant results in frail patients which may overshadow its value for the fibrositis, while the latter method, owing to the considerable period over which it has to be administered, is always liable to the criticism that the disease might in this interval have alleviated itself by natural means anyhow.

When the pain can be localized to one or two definite spots or nodules, the injection of a small quantity of a local anesthetic, or even simple needling, will often result in relief.

It is pointed out by most writers on the subject of fibrositis that any method of treatment which will produce copious sweating is likely to produce improvement in this disease. This is explained by them as being due to a restoration of the normal functioning of the skin. I have often wondered however whether the benefit produced is not due more directly to the elimination of sodium chloride by this route. A salt free diet is of considerable benefit in this condition, more, however, perhaps from a prophylactic point of view than as a curative measure once an attack has started. These patients should in addition increase their fluid intake to a minimum of five pints a day. In cases believed to have a metabolic basis, sensitivity to particular foodstuffs must be carefully inquired into. In Germany the skin protein tests are sometimes performed for this purpose, as in cases of asthma or hay fever. Alcohol is generally prohibited in fibrositis but when this is harmful the patient is, in my experience, generally aware of the fact and has, if intelligent, already "gone dry."

In acute cases, as in gout, it is important that the bowels shall act briskly. Calomel followed by salts, which may well be taken each morning until the patient is cured, is probably best. Colonic lavage will be found in certain cases to be of great value in the later stages but should never be permitted too frequently.

Medicinally the chief indication is for drugs of the analgesic groups. These may be of the types which act locally at the site of the pain, such as acetylsalicylic acid and the salicylates, or those which act centrally through the higher centers such as aminopyrine or the barbiturates. The thiosinamine group are also of value by injection and act by producing a state rather similar to mild protein shock. Of the value of histamine given by injection it is too early to speak with certainty, but it seems as though this substance is of definite value when the lesion is in the muscle substance rather than in an area chiefly composed of avascular fibrous tissue. On general principles the alkalis seem to be of value in fibrositis. The salts of gold which we have in England have been using fairly extensively in the rheumatic group are useless in fibrositis and may be harmful. The use

of iodine in some form is traditional, although its employment is empirical.

Of physical methods heat and massage are the two chief indications. Heat should be prolonged and penetrating. Infra-red rays are probably better than radiant heat and in certain cases, as when the muscles of the back are affected, diathermy is best of all. If the effects of dry heat of this sort are disappointing, it is generally worth trying the effect of moist heat in the form of hot soda baths, mud packs or mustard poultices, while the contrast douche (alternate hot and cold water from jets) when it is available is both stimulating and analgesic. Heat should be given without massage during the stage of effusion, and massage added when this acute phase is over. Rubefacient ointments should be rubbed in by the patient at home, while in some cases actual blistering as counterirritation will give results with local pains.

Massage when used in the treatment of fibrositis must be deep and will therefore be painful. It is essential however that the fibrous nodules should be thoroughly broken up, as they can be, by the trained fingers of the masseur. If the patient is unable to relax his muscles sufficiently for this purpose on account of the pain, an analgesic should be administered previous to this treatment and the period of preliminary heat prolonged. When in spite of these measures the muscles tend to go into spasm, histamine ionization may be given for a few applications. Massage must however be resumed later, even if the pain has been banished, since unless the nodules are destroyed relapse is ultimately almost certain.

After an acute attack of fibrositis the muscles, if carefully examined, will frequently be found to be somewhat wasted, presumably from disuse, and if this is neglected a condition of mild fibrosis will become established and the affected area will become permanently a "weak spot." Active postural exercises or sports should therefore be advocated during the period of convalescence or, when the patient is elderly or sedentary, a course of faradic stimulation of the affected muscle groups.

An attack of fibrositis must not be considered by the physician as being of little importance once the pain is gone. Apart from the undesirability of allowing the patient to drift needlessly into a chronic or semi-chronic condition his general resistance is considerably lowered, fibrositis takes it out of a patient quite unduly, and a proper period of convalescence, with possibly a course of tonic spa treatment, will in all cases prove a profitable investment and should be advised.

15 Harley Street, W 1

A Literary Achievement—The Life of Sir William Osler, by Harvey Cushing, to my mind is one of the most extraordinary literary achievements of our day. That a book in two volumes and more than thirteen hundred pages can, in this age, hold the attention of the reader from start to finish is one marvel. That a biographer who knew his subject as intimately as Cushing did Osler, who stood in the affectionate relationship that he did to him, can keep himself entirely out of the picture, is another. And that, in a book that is of necessity crammed with medical detail, there can be drawn the likeness of such a radiant personality, the record of such gracious living is the third. The Life is dedicated to medical students, with the hope that something of Osler's spirit may be conveyed to those of a generation that did not know him, and no one, I think, can read it without feeling how beautifully Cushing has wrought his labor of love and how adequately he has fulfilled his desire—Miller, C. J. *Some Literary Doctors of Medicine*, *Am J Obst & Gynec* 18 303 (Sept.) 1929

Clinical Notes, Suggestions and New Instruments

SEVERE XEROSTOMIA FROM X-RAY TREATMENT FOR HYPERTRICHOSIS

SIGMUND S. GREENBAUM, M.D. AND HENRY TUMEN, M.D.
PHILADELPHIA

Because of the fairly common attendant dangers, which are both difficult to foresee and difficult to prevent, dermatologists as well as roentgenologists are quite generally opposed to the uncontrolled and widespread use of x-rays or radium in the therapy of hypertrichosis or excessive hair growth. It often happens, however, that where the physician fears to tread the commercially minded layman, who learns of a medical advance and ignores its dangers, doesn't hesitate.

In various parts of the United States a number of patients with untoward cutaneous complications from the use of the commercialized Tricho (x-ray) System in the treatment of hypertrichosis of the face have been observed. These have served to emphasize the danger of using any x-ray "system" in the treatment of this condition. There has been in use in Philadelphia within the past year or two a new x-ray "system" said to employ specially filtered x-rays and which, in the individual whose case history is to follow, was not accompanied by the superficial complications such as cutaneous atrophy and telangiectases so commonly seen. It was, however, followed by deep effects on the salivary glands of the oral mucous membrane and, naturally, their secretions. Radiologists are well aware of and often see such disturbances following high voltage roentgen therapy for malignant growths within the oral cavity. The advertising matter of this concern (Cosmique Laboratories) makes no mention of the possible dangers of the procedure.

Since these patients may first consult their dentist, it appears of general interest to report this rather unusually marked result of high voltage roentgen therapy for a skin condition with unexpected harmful effects on the secreting epithelium of the oral glands.

REPORT OF CASE

A white woman, aged 52, had been previously studied by one of us in the early part of 1934. She had had pulmonary tuberculosis, which had become inactive following sanatorium treatment. Achylia gastrica had been originally discovered a number of years before and was shown to be still present at the time of the original studies by us. At that time, however, there were no oral symptoms. The blood count was quite normal and nothing else of importance was discovered. When seen again in January 1935 she complained of general oral soreness, especially of the tongue, associated with excessive dryness of the mouth, which had developed during the last week of September 1934 and had progressively become worse. The soreness was aggravated by the use of spicy and hot foods and by smoking. The patient stated that her lips felt puckered and that talking markedly aggravated the dryness, as did keeping the mouth open for a short time. The mouth on examination appeared to be dry and lacking salivary secretion. The mucosa itself was definitely drier than normal. The lingual epithelium had an atrophic appearance. The oral examination itself was annoying to the patient, first because the parts touched by the tongue depressor were sensitive and secondly because she was compelled to open and close her mouth repeatedly in an attempt to increase the oral secretions and thus moisten the mucous membranes, which rapidly dried out.

The causes for xerostomia were reviewed and the patient was questioned as to possible exposure to x-rays. This elicited the information that beginning in June 1934 she had received at the hands of a "cosmetologist" about twenty-four x-ray treatments to both sides of her face for excessive hair growth. The last treatment had been given in December 1934, one being given in each week of September, October and November despite the development of progressive oral dryness.

On our advice the x-ray treatments were discontinued during the next year. There was a slight but progressive improvement during the next year and when the patient was last seen, in January 1936, the symptoms had diminished a great deal but were still present to a moderate degree.

1714 Pine Street.

ANAPHYLAXIS DUE TO SODIUM MORRHUATE

KENNETH M. LEWIS, M.D., NEW YORK
Assistant Visiting Surgeon, Bellevue Hospital

The injection treatment of varicose veins of the lower extremities has grown in popularity so rapidly during the past five years, and the solutions in use have become so standardized, that attention should be called to a possible danger in the use of sodium morrhuate solutions. Mention has been made in the literature to localized manifestations of allergic reactions to sodium morrhuate, these mainly consisting of urticarial rashes appearing at the site of injection. Of these I have seen a goodly number. Little comment, however, is made about any constitutional reactions. Having had a severe anaphylaxis occur in one of my cases, and noting a similar experience in three other instances among my colleagues, I feel that a real danger exists and that the condition possibly has occurred with greater frequency than might be considered likely. All these cases of anaphylaxis occurred in individuals who had received injections of sodium morrhuate at a preceding interval of a year or more. It would thus seem as though there were some protein liver radical in the sodium morrhuate solutions to which certain individuals become sensitized and in whom later injections with the same solution caused foreign protein allergic reactions. Most of such reactions fortunately consist of local urticarias, but the experience of seeing a severe constitutional anaphylaxis makes one wonder whether the repeated use of this solution in the same patient is altogether safe. The following case is therefore reported.

REPORT OF CASE

Mrs. N. D., aged 35, seen Dec. 14, 1935, gave a history of having had extensive varicosities of both thighs and both legs for a number of years, all of which had been successfully thrombosed by the injection treatment in 1932. The solutions used at this time were 5 per cent sodium morrhuate and quinine and urethane, with a few injections of 20 per cent sodium chloride. There were no reactions at this time, either local or general. In 1934 the patient went through a normal pregnancy, following which a moderate number of varicose veins in the legs and thighs recurred. When I first saw her in December 1935, examination revealed the internal saphenous group of veins in each thigh varicosed and she was advised to have them reinjected. At the first visit only one injection was given, consisting of 1 cc. of 5 per cent sodium morrhuate. No reaction was noted. The patient was seen one week later, at which time she mentioned that she had some itching at the site of the injection during the preceding week but otherwise felt well. At the second visit, 15 cc. of 5 per cent sodium morrhuate was injected in a varicosity in one thigh and 2 cc. of the same solution in the opposite thigh, a total of 35 cc. The injections had just been completed when the patient suddenly complained of feeling ill and very warm. She rapidly went into collapse. The pulse rose to 150 and within a few moments was imperceptible. There was marked dyspnea, pallor of the face and cyanosis of the fingers. The respirations became rapid and shallow. A generalized urticarial rash was then noted and this was quickly followed by spasmodic, severe cramplike pains in the lower part of the abdomen, which could best be compared to labor pains. These were accompanied by severe retching. The blood pressure dropped to 70 systolic, 0 diastolic. The heart sounds were rapid and weak but of fair quality.

Epinephrine 1:1,000 in 10 min. (0.6 cc.) doses was given subcutaneously every ten minutes until a total of 3 cc. had been given and 1 grain (0.065 Gm.) of morphine sulfate in one-third grain (0.02 Gm.) doses every fifteen minutes was given hypodermically. The pulse remained imperceptible for about one hour and then gradually returned to normal over a period of two hours. The whole attack lasted about three hours the severity of the symptoms remaining about the same for the first hour and slowly subsiding during the remaining time. The patient was allowed to return home five hours after the onset of the attack, but nausea, weakness and recurrent waves of urticaria were present for the ensuing week.

The dramatic suddenness with which this attack occurred, its severity and the real danger of possible death were most impressive particularly as it occurred during a form of therapy which is so generally believed to be unaccompanied by danger.

Inquiry has revealed three similar experiences in different patients, fortunately none of them having a fatal outcome.

It would thus seem as though sodium morrhuate solutions should be used with the greatest care in patients who have previously received the same solution, if a sufficient time has elapsed to allow the development of a foreign protein sensitivity. One should be doubly careful with individuals who are subject to asthma, hay fever or any other allergic phenomena.

59 East Fifty-Fourth Street

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF CATHARTICS

OSCAR W. BETHEA, M.D.

Professor of Clinical Medicine, Tulane University of Louisiana
School of Medicine

NEW ORLEANS

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and The Journal of the American Medical Association.—Ed

Over a long period in the history of medicine there was an enthusiasm for depletion which is difficult for physicians at present to understand. This included bleeding by venesection, scarification and cupping, leeching, emesis, diaphoresis, diuresis and purging. These were employed with what seems to us today "a gay and reckless abandon." The present tendency is to confine the use of such measures to cases presenting definite indications and our conception of these is rapidly becoming more critical. More or less indiscriminate purgation is the last of the aforementioned measures to be materially restricted. In a recent survey of two of the largest hospitals in New Orleans, I¹ found that of all patients admitted to the medical services about 33 per cent received a large dose of some cathartic within the first twenty-four hours, 11 per cent were so favored in the second twenty-four hours. There is some evidence of a decreasing tendency to prescribe cathartics.²

The persistent tendency by the public to the use of purgatives is largely the result of the influence of commercial advertising. The exploitation of the public in this particular is a disgrace to our modern civilization. In this campaign the welfare of suffering humanity is given secondary consideration, if any at all.

Before deciding to administer an active cathartic to a patient, one should certainly carefully weigh the indications and contraindications. When one considers the limited possible value of emptying the intestinal tract of its normal contents and the probable disadvantages such as dehydration, exhaustion, discomfort, loss of nutrition, disturbance of sleep and even possible danger one should at least consider all available data. Some of the possible disadvantages are well illustrated in the recent statistics³ from the Charity Hospital at New

1. Bethea, O. W. The Use and Abuse of Purgatives. *Intern. J. Digest.* 24: 239 (March) 1934.

2. Gathercoal, W. N. The Prescription Ingredient Survey. *Amer. J. Pharmaceutical Association* 1933.

3. Maes, Urban. Personal communication to the author.

Orleans covering acute appendicitis It was shown that, of those patients receiving no purgative before operation, one in every ninety-six died, of those who had taken a purgative before operation, one in every eleven died, of those who had been the victim of repeated purgation, one in every four died

Cathartics have been divided into various groups, such as laxatives, hydrogogues and drastics One of the most convenient groupings for study is the following ⁴

1 Drugs, such as liquid petrolatum, that act only mechanically by reason of their bulk or consistency

2 Drugs, such as agar, that act by absorbing and holding water, and thereby preventing its absorption from the bowel

3 Saline cathartics, such as magnesium sulfate, that act partly by preventing absorption of water and partly by a direct action on the bowel wall

4 Drugs, such as cascara sagrada, containing a quinone group These act mainly on the colon

5 Drugs, such as podophyllum, containing a resinous body, which is slowly broken down, releasing an irritant principle

6 Drugs, such as castor oil, containing unsaturated fats

7 Inorganic drugs, such as mercury and sulfur

I shall divide these agents into two general groups based on their therapeutic use

1 Those employed for an acute condition, that is, to meet the present need of the patient

2 Those employed for longer periods (as in chronic constipation or edema)

I am not considering here such measures for emptying the alimentary tract as enemas and suppositories

In selecting a purgative agent for the immediate need of the patient, it is desirable to choose one that will produce the desired result with the least possible discomfort or danger and will have the minimum of undesirable side effects (such as continued purgation)

It should also be an agent that may be taken with convenience and retained with certainty The drugs in this group are so often in the family medicine cabinet that it is seldom necessary to write a prescription In most instances it is also best to inquire into the history of the patient as to his experience in the past A drug that may be very palatable to one may be exceedingly objectionable to another Again, a dose of a certain amount may be satisfactory to one individual and not to another In other words, when it comes to purgation every patient is a law unto himself

Magnesium Sulfate, U S P, is probably the most widely used purgative It is efficient in action, rarely causes discomfort, has few undesirable side-effects, and the principal disadvantage is an unpleasant taste, which may be eliminated to a large extent by dissolving the salt in some palatable fruit juice Its mode of action is characteristically that of the salines I seldom find it necessary to give more than one-half ounce (15 Gm) at a dose Why the standard ward dosage in many institutions should be 1 or 1½ ounces (30 to 45 Gm) I have never been able to understand

Solution of Magnesium Citrate, U S P, a flavored, carbonated saline, is often recommended by physicians It is seldom that a prescription is written for it, as it is so well known to every one It is much more expensive per dose than most of the other purgative agents and this has probably militated against its general use It is exceedingly nauseating to many persons and not infrequently causes violent and continued purgation

Magnesia Magma, U S P, commonly known as milk of magnesia, is palatable to most persons and is

especially easy to administer to most children Its alkalinity makes it particularly desirable in hyperacidity, and it neutralizes hydrochloric acid in the stomach without the liberation of carbon dioxide It may be administered plain or stirred in cold water Its continued use may cause discomfort in the rectal region, characterized particularly by a sensation of burning

Seidlitz Powders, U S P, also known as compound effervescing powders, form one of the most palatable mild laxatives available The taste is not objectionable to most persons and, when added to water for administering, it forms an alkaline, effervescing, carbonated beverage that rarely causes nausea and is usually satisfactory in results

The sodium phosphates comprise several preparations, all of which are inexpensive and fairly satisfactory in their effect

Sodium Phosphate, U S P, is not often prescribed as such It is extensively used in some of the proprietary, which are usually concentrated solutions made by adding citric acid Effervescent Sodium Phosphate (U S P) is a granular powder which, when added to water, forms a fairly pleasant carbonated drink It is put up in 2 to 4 ounce bottles and is employed particularly as an early morning laxative in chronic constipation

Sodium Biphosphate, U S P, frequently called sodium acid phosphate, is an excellent laxative and is frequently used to acidify the urine For the latter purpose its usefulness is somewhat limited by its laxative quality

Magnesium Oxide, U S P, is seldom employed as a purgative agent but is extensively prescribed to neutralize gastric acidity Hence its laxative quality must be given consideration

Magnesium Carbonate, U S P, is not often prescribed as such I remember that in my earlier years this agent pressed into blocks was a very common domestic article It was used as a face powder by the ladies of the household, as a dusting powder for the children, and small amounts were nibbled off the block for acid stomach while larger bites were taken when its laxative effect was desired An agent with so wide a field of usefulness hardly deserved to fall into disuse

Castor Oil, U S P, would probably come next to magnesium sulfate in popular usage, at least if bulk is considered The old, crude oil that we remember from our earlier years often had a disagreeable odor and always a disgusting taste The highly refined oil that may now be purchased is odorless and practically tasteless The principal disadvantage in its use is the psychic inhibition that we have carried over from the days of outraged youth When we remember the limitations of the sense of taste, we realize that most of the unpleasantness of this drug, against which childhood has rebelled throughout the generations, is really due to smell, and the old practice of holding the nose when taking the dose was not without value Many plans have been suggested for making castor oil less disagreeable The so-called tasteless preparations that are made by sweetening the oil with saccharin and flavoring it with some volatile oil are sometimes more atrocious than the oil itself, even in its crudest state, could ever hope to be It may be administered in lemon juice, pineapple juice, ginger ale or in various other ways Some prefer to take it warm One of the most palatable ways of administering castor oil, and one that is particularly effective when there is acute indigestion or nausea from any cause, is to put the dose of oil

⁴ Solis Cohen, Solomon and Githens T S Pharmacotherapeutics
Materna Medica Drug Action New York, D Appleton & Co 1928

into a glass, add 4 cc (1 fluidrachm) of paregoric (Camphorated Tincture of Opium U S P), beat it up vigorously with a spoon, and let the patient gulp it at one swallow. This process divides the oil into small globules, each of which is surrounded by a coating of the paregoric. Should the first dose be vomited, it should be repeated immediately, the second dose is practically always retained. Castor oil has the quality of purging and then lessening intestinal activity. Occasionally some medical men speak of this agent being toxic. "It may be given in large quantities without any symptoms except its mild, laxative action."⁵ It is principally absorbed from the small intestine, so its action on the colon is indirect.

Calomel (Mild Mercurous Chloride, U S P) one time was the "magnum donum Dei" of the medical profession. It was the beginning and sometimes the end of most therapeutic effort. Today it is rapidly falling into disuse. To a large extent the same may be said of Mass of Mercury, U S P, and Mercury with Chalk, U S P. These agents are still employed to a considerable extent in the treatment of syphilis in children.

Phenolphthalein, U S P, is increasing in favor with the profession, even as a prescription ingredient. It is extensively employed in many proprietary remedies. It is largely without toxic action and, though skin eruptions sometimes occur, it is a fairly safe and reliable laxative and is so easily administered, even to children, that its place in therapy has been easily established.

Naturally many agents that will be considered in the next section under those for continued use may be given for temporary need if a sufficiently large dose is employed.

The use of cathartic drugs is often indicated for extended periods of time, but particularly in the treatment of chronic constipation the value of proper diet, sufficient water, exercise, and the establishment of the habit of intestinal elimination through patient effort must be remembered. Bastedo⁶ has quaintly remarked that "the prescribing of purgatives is oftentimes an indication of laziness on the part of the physician."

"With the majority of patients, constipation is due to functional rather than mechanical causes, and these principally affect the large bowel."⁷ "Eighty-five per cent of constipation is functional and nearly all of these are due to faulty habit."⁸

In the presence of edema, the use of hydragogue purgatives is guided entirely by the evident requirements of the particular patient. In chronic constipation the object should be to give cathartics only until the condition can be corrected and a proper habit established. In any event a preparation should be selected that is palatable if possible, that will cause a minimum of interference with digestion, that will be free from discomfort, that will not increase the purgative habit, and that will be free from other unfavorable side effects, such as a tendency to cause hemorrhoids.

Olive Oil U S P, is palatable to many persons and not particularly objectionable to the majority. It is nutritious, tends to lessen gastric acidity, favors emptying of the gallbladder, and directly or indirectly stimulates the pancreatic output. As a laxative it is usually

best taken in one dose at bedtime, though some find it more satisfactory to take divided amounts two or three times during the day. It occasionally causes abdominal discomfort, though such reaction is the exception. As much as I regret to have such a statement emanate from the South, it cannot be replaced satisfactorily by Cottonseed Oil, U S P, as in the process of refining this latter product certain fatty acids are removed on which olive oil depends for part of its effect. I recently visited a ward containing eighteen patients suffering from pulmonary tuberculosis for whom olive oil had been the only laxative employed for many months.

Liquid Petrolatum, U S P, has continued to hold a prominent place in the treatment of chronic constipation and some kindred disorders. It is not absorbed, passing through the intestine unchanged. "Its action is that of a mechanical lubricant"⁹ and, though it does have some tendency to increase the bulk of the intestinal content, it does not appreciably increase peristalsis but makes more effective the peristalsis that is already operative. It is particularly valuable in such conditions as hemorrhoids, anal fissure and those conditions in which some part of the lumen of the intestinal tract is reduced in caliber.

The Emulsion of Liquid Petrolatum, U S P, has been extensively advertised by the various pharmaceutical houses, and many proprietary products are on the market. Some of these claim to have particular value because of the fact that the emulsion is made with agar. This is misleading because the amount of agar present is insufficient to have any therapeutic effect, and there is enough water present in the emulsion to negate any possible benefit from the agar. It would certainly seem probable that all liquid petrolatum preparations would interfere with digestion and assimilation to a certain extent.

Cascara Sagrada, U S P, as now put on the market is not only effective but almost free from discomfort. While the extract (U S P) is sometimes employed the drug is principally ordered, as the fluidextract (U S P) or the aromatic fluidextract (U S P). These are prescribed alone or with milk of magnesia as previously mentioned, or small amounts are added to various formulas to make them laxative. It should be remembered that only the aromatic fluidextract is miscible with aqueous solutions. In ordering pills or tablets or in instructing patients to purchase and use them, physicians should be careful to avoid the various pharmaceutical combinations that contain drastic cathartics.

Sodium Sulfate, U S P, is again coming into popularity. Faust prefers it to all other agents as a purgative to be used after an anthelmintic. One of the most pleasant plans of administering it for continued use is to prescribe it with an equal amount of Potassium Bitartrate, U S P, and have the patient take one or two teaspoonfuls of this mixture with fruit juice on first awakening in the morning.

Agar, U S P, is seldom a prescription ingredient but often is employed to give bulk to the intestinal content.

Senna, U S P, is a popular domestic remedy. It is sometimes employed by chewing the leaves but more frequently by making them into a tea. The excellent quality of this agent is largely overlooked by the medical profession. Compound Powder of Senna, U S P is sometimes prescribed.

⁵ Gunn, J. A. A Text Book of Pharmacology and Therapeutics (Cushny). Philadelphia, Lea & Febiger 1934.

⁶ Bastedo, W. A. Materia Medica, Pharmacology Therapeutics and Prescription Writing. Philadelphia W. B. Saunders Company 1932.

⁷ Friedenwald Julius and Morrison Samuel. Constipation. Cyclopedia of Medicine volume IV. Philadelphia F. A. Davis Company 1935.

⁸ Morgan, W. G. Constipation in Practice of Medicine (Tice). Hagerstown Md. W. F. Prior Company.

⁹ Sollmann Torald. A Manual of Pharmacology Philadelphia W. F. Saunders Company 1932.

Rhubarb and its preparations (U S P) and sulfur in its various forms (U S P) are still used, though with decreasing frequency

The old "drastics" familiar to the past generations of medicos have largely and deservedly fallen into disuse. They are not necessary in modern medicine and their use was certainly fraught with an element of danger. The least objectionable of these, Aloin, U S P, and Podophyllin, U S P, are still prescribed for certain definite indications

SUMMARY

Cathartics should not be used without definite indications

In the selection of a purgative agent, due attention should be given to the indications and contraindications presented by the particular patient

The United States Pharmacopeia XI contains a variety of properly standardized cathartic drugs that will meet the therapeutic requirements in most if not all instances

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER Secretary

FISCHER MODEL "SWI-12" SHORT WAVE APPARATUS ACCEPTABLE

Manufacturer H G Fischer & Company, Chicago

This device is recommended for medical and surgical diathermy. High frequency radiations may be applied by cuff electrodes, electromagnetic coils and pad electrodes for medical diathermy applications, and terminals are provided for surgical electrodes. The wavelength of this unit is 12 meters. Electrodes or applicators furnished with the apparatus consist of pads, cuffs, and insulated cables. The circuit is the well known push-pull type, having two oscillator and two rectifier tubes. The patient's circuit is inductively coupled to the tank circuit. The variable condenser is used to tune the patient's circuit to electrical resonance. When this machine is operated

under full load, it draws not more than 700 watts. Since no reliable method has been proposed to measure the output of energy available to the patient, the value is not given. (Figure 2 is the diagram of the circuit)

The manufacturer submitted evidence substantiating the heating ability of the unit. For the electric field method cuff electrodes were applied to the thigh, one posterior to the hip and one anterior to the knee. The cuff electrodes used in the investigation were made of metal, surrounded by thick protecting rubber. Several layers of toweling



Fig 1 — Fischer SWI 12 short wave machine.

or felt, or both materials, were placed next to the skin to absorb perspiration and also to permit suitable spacing of electrodes. In the case of the electromagnetic field method a heavy, insulated coil was wrapped around the thigh and separated from the skin by one half inch of toweling and felt.

The human subjects were all vigorous, adult male medical students, ranging in weight from 150 to 180 pounds (68 to 81.6 Kg). Two trocars placed in hard rubber cannulas were inserted into the thigh. One was introduced at right angles to the thigh and straight down into the depth of the muscle tissue until the instrument was at an approximate depth of 2 inches or until the femur was encountered. The second was introduced as nearly parallel to the skin as possible and subcutaneously at an approximate depth of one eighth inch. The

trocars were removed, leaving the rubber cannula in situ. Temperature measurements were taken by means of thermocouples of the hypodermic needle type and introduced through the cannulas. The third thermocouple, placed on the skin surface underneath the cuffs, was used to measure skin surface temperature. Cold junctions were immersed in ice enclosed in a quart vacuum bottle. The readings were observed on a Leeds & Northrop portable potentiometer. The thermocouples were calibrated in degrees Fahrenheit against a Bureau of Standards thermometer. Initial temperatures were taken and then each subject was submitted to a twenty-minute application of short wave diathermy energy of maximum current strength at his tolerance. At the end of this period the temperatures

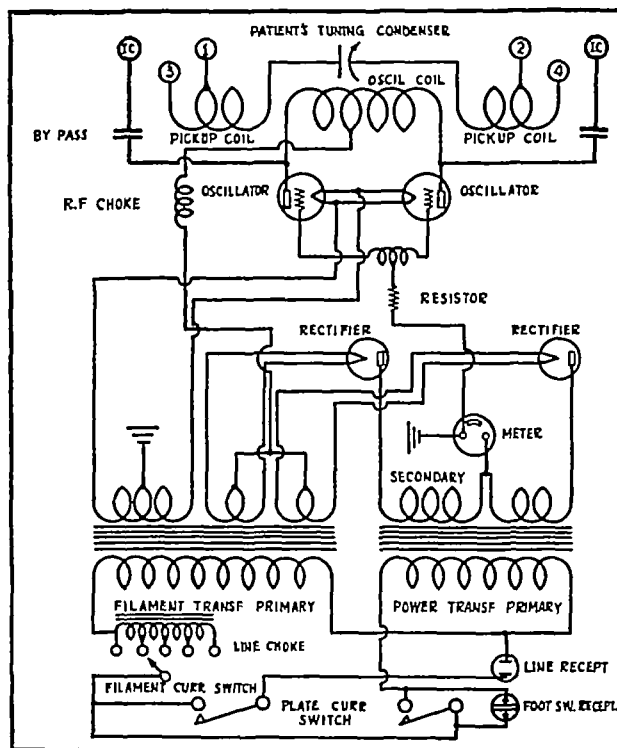


Fig 2 — Schematic diagram of circuit

were again recorded. Temperatures were observed at intervals of one minute until the temperature began to drop. The highest temperature attained was recorded as the final temperature in each instance. Then the thigh was permitted to cool until the temperature dropped to or near the initial temperature and the observation was repeated. Each reading in the table is the average of six observations

Temperature Readings

Technic	Wave-length	Muscle Temperature		Sub cutaneous Temperature		Skin Surface Temperature		Oral Temperature	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
Cuff	12	99.50	106.22	96.64	103.76	96.62	98.72	98.4	99.26
Coil	12	99.73	106.60	97.23	105.83	94.55	99.37	98.67	99.60

Data on the temperature rise when pad or air gap electrodes were employed were not submitted. The temperature rise of the transformer, after the machine had been operated at full load for two hours, came within the limits of safety prescribed by the Council. The shipping weight of the apparatus is about 155 pounds. Burns may be produced but may be avoided by ordinary precaution. Their likelihood to occur is much less than with conventional diathermy.

The machine was installed in a clinic acceptable to the Council and operated under actual clinical conditions. It was

reported as giving satisfactory service. In view of the favorable report based on the performance of this unit when cuff electrodes or coil technic was used, the Council on Physical Therapy voted to include the Fischer Model "SWI-12" Short Wave Apparatus in its list of accepted devices.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORT
PAUL NICHOLAS LEECH Secretary

THE USE OF TRICHLOROETHYLENE FOR GENERAL ANESTHESIA

The chemical trichloroethylene was first described in 1864. In 1915 Plessner¹ found symptoms of poisoning in those working with the preparation commercially and noted the special affinity of this agent for the sensory fibers of the trigeminal nerve. Oppenheim² suggested its use by inhalation in the treatment of trigeminal neuralgia, and for that purpose it is accepted for inclusion in New and Nonofficial Remedies. Recently, however, trichloroethylene has been used as a general anesthetic. The product used for this purpose differed from that used in the treatment of trigeminal neuralgia. It contained no added diluent or stabilizing agent and the boiling points were more closely defined.

The evidence for the usefulness of this agent in general anesthesia consists of one experimental³ and one clinical report,⁴ both by the same group of workers. Jackson and his associates claim these advantages for trichloroethylene (for anesthesia): it is safe where there is any fire hazard (cautery), because it is noninflammable and nonexplosive, the fumes do not spread, and it is more pleasant than ether. It acts like ethylene (and in stronger concentrations, like ether) in animals. Jackson³ devised a special apparatus for its administration and used it experimentally and clinically. It is claimed that the machine produces the vapors of trichloroethylene continuously in any strength desired.

The clinical report⁴ of 300 anesthetics and analgesics included twenty-five dental cases, twenty-five cases of removal of venereal warts and 198 cervical cauterizations. The authors state:

As yet we have not used trichloroethylene in laparotomies or other major surgical procedures (except in experimental animals).

Trichloroethylene is administered by starting with a very dilute vapor (mixture) of trichloroethylene in air and slowly increasing the concentration until the gage on a special (proprietary) apparatus records half trichloroethylene and half air (there does not seem to be information available on the actual concentration which produces satisfactory anesthesia). It is stated not to be volatile and that "a small amount goes a long way."³ Its chief danger lies in its rapid effect. This applies especially to the first stage. In one case this rapidity resulted in a respiratory failure (recovery by artificial respiration), which was attributed to a "slight overdose."³

According to reports⁴ there is flushing of the face, mild lacrimation, and slight increase in the pulse rate in the first stage. In the second stage there is mild excitement, twitching of the hands and face, lateral and rotary nystagmus and an increase in pulse rate of from 10 to 20. Severe excitement was attributed to improper administration. Eight of the 300 patients became so mildly excited that the third stage could not be induced. Three of these patients are said to have been alcoholic.

1 Plessner. Berl. Gesellsch. f. Psychiat. u. Neurol. Nov. 8, 1915. *cf. Neurol. Zentralbl.* 34:916, 1915. *Monatschr. f. Psychiat. u. Neurol.* 39:129, 1916. Berl. Gesellsch. f. Psychiat. u. Neurol., Feb. 14, 1916. *Monatschr. f. Psychiat. u. Neurol.* 44:374, 1918, quoted by Oljenick. Ignaz. Trichloroethylene Treatment of Trigeminal Neuralgia, *J. A. M. A.* 91:1085 (Oct. 13), 1928.

2 Oppenheim. *Neurol. Zentralbl.* 34:918, 1915, quoted by Oljenick.
3 Jackson, D. E. A Study of Analgesia and Anesthesia, with Special Reference to Such Subjects as Trichloroethylene and Vinethene Together with Apparatus for Their Administration. *Anesth. & Analg.* 13:198 (Sept. Oct.) 1934.

4 Stricker. Cecil. Goldblatt. Samuel. Warm. I. S. and Jackson. D. E. Clinical Experiences with the Use of Trichloroethylene on the Production of Over 300 Analgesics and Anesthetics. *Anesth. & Analg.* 14:68 (March-April) 1935.

addicts and the other five very emotional girls.⁴ Complete relaxation occurs in the third stage. The pulse is full and strong and respirations are more rapid and shallower. It is stated that there may be slight (?) cyanosis. In clinical cases recovery generally occurred in about five minutes.⁴

Jackson³ noted that the formula suggested chloroform and considered the possibility of comparable liver effects. Herzberg⁵ compared the observations in three dogs killed with prolonged trichloroethylene anesthetics and two dogs killed by electrocution. He concluded that the changes in the anesthetized dogs were not specifically due to the anesthetic agent because the control (electrocuted) dogs showed similar (principally liver) changes.⁵ This evidence seems inadequate and the conclusion unwarranted. Apparently basing his opinion on this work, Jackson³ notes that, as far as liver effect is concerned, ether resembles chloroform more than trichloroethylene does.

The reports of trigeminal effects of this agent were noted, but it is suggested by the authors that they are in error. Jackson states:

In the light of the work we are here reporting it is fairly apparent that the symptoms produced by the inhalation of trichloroethylene (as facial neuralgia) vapors were varying degrees of general anesthesia and that pathological conditions observed were due either to contamination in the trichloroethylene or more likely to altogether different causes.

This statement seems unwarranted after considering the older literature on the use of this agent. The trigeminal effect has generally been noted to persist after all other effects have passed. It should be determined just what does become of this trigeminal sensory paralysis after such anesthesia. To attribute pathological conditions to contaminations seems especially dangerous in view of the possible phosgene production (by decomposition), which is not mentioned by the authors.

The Council held that the available evidence does not justify the acceptance of trichloroethylene for use as a general anesthetic and postponed consideration to await (a) solution of the question of potential toxicity of decomposition products of the drug and (b) development of the evidence to substantiate the claims for its clinical use as a general anesthetic.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

CAFFEINE WITH SODIUM BENZOATE—"A mixture of caffeine and sodium benzoate, containing when dried to constant weight at 80 C., not less than 47 per cent and not more than 50 per cent of anhydrous caffeine ($C_8H_{10}N_4O_2$) and not less than 50 per cent and not more than 43 per cent of sodium benzoate ($NaC_7H_5O_2$)." U. S. P.

For standards see the U. S. Pharmacopeia under Caffeine cum Sodii Benzoate.

Amphuls Solution Caffeine Sodii Benzoate 2 cc. Each 2 cc. contains 0.48 Gm. (7½ grains) 24.33 per cent solution marketed in packages of ten 2 cc. size ampules.

Prepared by the U. S. Standard Products Co. Woodworth, Wis.

I V C HALIBUT LIVER OIL WITH VITAMIN D CONCENTRATE IN NEUTRAL OIL—Halibut liver oil to which has been added a concentrate of liver oils of *Gadus morrhua*, *Ophiodon elongatus* and *Anoplopoma fimbria*. It is assayed to have a potency of not less than 59,000 units (U. S. P.) of vitamin A per gram and not less than 1,990 units (U. S. P.) of vitamin D per gram.

Manufactured by the International Vitamin Corporation, New York. The vitamin D concentrate used is made under U. S. patent 1,627,971. U. S. trademark 314,818.

Capsules I V C Halibut Liver Oil with Vitamin D Concentrate in Neutral Oil 3 minims.—The content of each capsule is assayed to contain not less than 10,000 units (U. S. P.) of vitamin A and not less than 945 units (U. S. P.) of vitamin D.

5 Herzberg. Mortimer. The Histology of Tissue Taken from Animals Killed by Prolonged Administration of Concentrated Vapor of Trichloroethylene. *Anesth. & Analg.* 13:203 (Sept. Oct.) 1934.

HALIBUT LIVER OIL (See New and Nonofficial Remedies, 1936, p 459)

The following dosage form has been accepted

Capsules 1 V C Halibut Liver Oil Plain 3 minims—The content of each capsule is assayed to contain not less than 10 000 units (U S P) of vitamin A and not less than 170 units (U S P) of vitamin D
Manufactured by the International Vitamin Corporation New York
No U S patent. U S trademark 314 818

SCARLET FEVER STREPTOCOCCUS TOXIN (See New and Nonofficial Remedies, 1936, p 388)

The National Drug Co, Philadelphia

Scarlet Fever Streptococcus Toxin for Immunization National (See New and Nonofficial Remedies 1936 p 388)—Also marketed in packages of six 10 cc. vials of toxin one containing 500 skin test doses one containing 2 000 skin test doses one containing 8 000 skin test doses one containing 25 000 skin test doses and two containing 80 000 skin test doses

BUTESIN PICRATE (See New and Nonofficial Remedies, 1936, p 71)

The following additional dosage form has been accepted

Butesin Picrate Ointment with Metaphen Butesin picrate 1 per cent and metaphen 15 000 incorporated in an ointment base composed of white wax paraffin, petrolatum sodium borate and water 99 per cent

ANTIPNEUMOCOCCUS SERUM TYPES I AND II COMBINED (See New and Nonofficial Remedies, 1936, p 374)

E. R. Squibb & Sons, New York

Concentrated Anti Pneumococci Serum Types I and II (See New and Nonofficial Remedies 1936 p 375) Also marketed in packages of one syringe containing 20 000 units each of types I and II pneumococci

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING GENERAL DECISIONS.

FRANKLIN C. BING, Secretary

FRESH COMPRESSED YEAST, DRIED YEAST, AND YEAST EXTRACTS ARE SPECIAL PURPOSE FOODS

Compressed fresh yeast, dried yeast and yeast extracts ordinarily are not classed among the usual table foods but are looked on as foods with usefulness restricted to special purposes. These products are useful for increasing the vitamin B₁ and G content of the diet. Fresh yeast and dried yeast if taken in sufficient quantity have a mild laxative effect on many persons. Compressed fresh yeast, dried yeast and yeast extracts therefore come within that class of foods designated as "special purpose foods" in the Rules and Regulations of the Council on Foods.

To be eligible for acceptance, the labels and advertising for these yeast products shall prominently display the designation "special purpose food," list the ingredients other than yeast substances, state the percentages in close proximity to product name, and give the vitamin B₁ and G unitages determined by biologic assay. Special claims for yeast products must have Council approval before use in advertising.

AMENDMENT OF COUNCIL DECISION "VITAMIN E CLAIMS FOR PUBLIC ADVERTISING"

There are at present no adequate scientific data establishing the role of vitamin E in human dietetics. This vitamin is present in many common foods, the necessary amount, so far as is known, being acquired with any ordinary diet. Statements or claims referring to vitamin E in advertising to the public imply a need for special sources of the vitamin that is not warranted by present knowledge. Neither claims for vitamin E nor mention of the vitamin shall appear on food labels or in advertising addressed to the public, nor will such claims be recognized if they appear in advertising addressed to the profession if directly or inferentially such advertising recommends the use of the preparation because of its vitamin E content.

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

FRANKLIN C. BING, Secretary

KELLOGG'S ALL BRAN OMITTED FROM THE LIST OF ACCEPTED FOODS

Submitted advertising for Kellogg's All Bran (THE JOURNAL, Feb 9, 1935, p 474) has repeatedly been found to be in conflict with the spirit and intent of the General Decisions on Food and Food Advertising of the Council on Foods. While much of the explanatory part of the advertising may be within the bounds of the technical criticisms that the Council has made to the Kellogg Company in the past, the total effect is to impress the reader that Kellogg's All Bran is the answer to substantially all constipation difficulties. The qualification insisted on by the Council ("due to insufficient bulk") is observed, to be sure, but its force is minimized by the general effect of the presentation. Statements such as "So I have been eating it for two or three weeks, and my constipation (due to insufficient bulk) has gone, and I was constipated for 25 years or more" illustrate the type of objectionable advertising copy that has been used. It is not reasonable to suppose that taking a small amount of All Bran for two or three weeks could correct constipation of twenty-five years' duration. Furthermore, such testimonials of a health, medicinal or therapeutic character, or with such implication, are in conflict with the General Decisions of the Council.

The exclamatory parts of the advertising, such as the frequent short phrases and display heads, are too often of the "patent medicine" order.

Disparaging statements such as "For 34 years, I had to take pills, salts, oils, teas, or other fluids, which did more harm than good" and "Finds All-Bran better than Pills, Salts and Oils" abound in the copy.

The reference to symptoms that may accompany constipation, together with the implication that Kellogg's All-Bran will correct these conditions, is contrary to the Rules of the Council.

It is the contention of the Council that advertising for accepted food products should not be predicated on personal charm and social preferment, as illustrated in statements such as "So many women lose their good looks after thirty. They fail to realize the importance of what they eat day after day" with the implication that bran will cure the discomfort, headaches, poor appetite and listlessness of the person who has lost her good looks.

The Council voted, in view of the continued objectionable advertising for products of the Kellogg Company and the claims made, that acceptance of all products of the Kellogg Company be rescinded, and that the products will be reconsidered without prejudice if presented not earlier than one year from date of notification, to determine whether or not the policy of the firm has changed sufficiently to warrant reacceptance of the products at that time.

When the foregoing report was transmitted to the Kellogg Company and to its advertising agency for All-Bran, N. W. Ayer & Son, Inc., the latter replied in part:

"You know we regret not being able to see eye to eye with you on this advertising, particularly with reference to testimonials.

"However, in the published statement, you have expressed the rules of your Association and have been entirely fair in pointing out where our advertising did not observe those rules.

We are sorry for this disagreement in views. But at least we wish to thank you for the great amount of time and thought you have given to this whole situation."

The Council has recently summarized (THE JOURNAL, Sept. 12, 1936, p 874) the available evidence regarding the significance of bran in the diet. Bran is a product which is capable of contributing to the nutritive requirements in a number of respects notably as a source of roughage. There are individuals, however, who cannot tolerate bran. The Council believes advertising which artfully conceals the potential danger of the indiscriminate use of bran is contrary to the best interests of the public.

The Council therefore has reaffirmed its stand and has authorized publication of this report.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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Cable Address

Medic, Chicago

Subscription price

Seven dollars per annum in advance

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SATURDAY, OCTOBER 17, 1936

ACCIDENTAL BURNS IN CHILDREN

Accidents among children, according to a report just published by the United States Public Health Service,¹ constitute a significant menace to infant lives. Moreover, accidental burns (conflagration excepted), are the leading cause of death at ages 1, 2 and 3 years, and for the age group under 5 years as a whole. This is due, in part, to the relatively low death rates from other causes after the first year and up to the fifth, which allow the deaths from burns to assume such a leading place. Another fact looms with increasing importance—accidental deaths as a whole bid fair to nullify many of the gains that have been made through preventive medicine. What a strange paradox, unflattering to our civilization—we can save children from diphtheria, only to have them burned to death.

The study by the public health authorities covered the years from 1925 through 1932. Causes of death included are, according to the International List of Causes of Death, "burns (conflagration excepted, of any organ or part), by boiling liquid, boiling water, coal oil, corrosive substance, fall with lighted lamp, fire, gasoline, kerosene, molten metal, petroleum, steam, sulfuric acid and vitriol, dermatitis actinica and ambustionis, effects of corrosives, radium and x-rays, explosion of gasoline, kerosene and lamp, fall into fire, fire (conflagration excepted), lamp accident, playing with fire, scald of any part of the body by steam, and sunburn." The study is divided into four regional groups, covering the forty registration states of 1925 and the District of Columbia: Northeastern,² North Central,³ Southeastern⁴ and Western.⁵ The data collected for these four regions show that the actual number of

deaths from burns in each of the groups decreased from 1925 to 1932, but the percentage distribution of the deaths by age varied little. In each geographical division, the lowest limit of relative mortality due to burns (ratio of fatalities from accidental burns to fatalities from all accidents) was about the same 3 per cent, and occurred in the age group 10 to 14. The upper limits of relative mortality are as follows: South eastern, 57 per cent, Northeastern, 43 per cent, North Central, 38 per cent, Western, 33 per cent. The upper limits occur at the age of 2 years in all save the South eastern, where 3 years is the age of highest relative mortality. In all regions ages 2, 3 and 4 show the most rapid decline, the greatest declines being at age 3 in the Northeastern group (28 per cent) and the South-eastern (25 per cent).

Accidents of all kinds are rapidly increasing in importance. Here is a class of accidents of which the causes are well known, the prevention relatively simple. Further emphasis must be placed on safety in the home, since in all probability, though the study does not so indicate, most of these accidents to children occurred in that sanctuary.

THE BRITISH MEDICAL ASSOCIATION AND THE VOLUNTARY HOSPITALS

Prior to 1920 the Voluntary Hospitals of Great Britain—purely charitable organizations supported by philanthropy for the benefit of the poor—admitted the majority of persons seeking hospital care. All who could not pay for the services of private physicians and who were unwilling to accept or were not entitled to service in the Poor Law Hospitals found the Voluntary Hospitals freely available. The Poor Law Hospitals were next in importance in providing hospital care for the poor. Patients, however, had to be "destitute" before they could be admitted to these institutions, although in a few areas service was given to practically any person belonging to the income classes entitled to participate in the National Health Insurance. Private patients were generally cared for in nursing homes, which formed but a small part of the hospital service for the nation.

In the decade after 1920, two fundamental changes took place in the traditional methods for providing hospital care in Great Britain. The first was the result of social and scientific developments, the second, of legislation. Following the World War, the increased demand for hospitalization, which everywhere is characteristic of modern nations, was overstimulated in England. One of the causes of this increased use of hospital care was the health insurance system, which furnished only a general practitioner service and left all the more serious cases to be cared for by hospital staffs. Much of the increased use of hospitals was due to the scientific advances in medicine, which introduced many new methods of diagnosis and treatment requiring institu-

1 Gafafer W. M. Time Changes in the Relative Mortality from Accidental Burns Among Children in Different Geographic Regions of the United States 1925-1932. Pub. Health Rep. 51: 1308 (Sept. 18) 1936.

2 Connecticut Delaware Maine Maryland Massachusetts New Hampshire New Jersey New York Pennsylvania Rhode Island Vermont and District of Columbia.

3 Illinois Indiana Iowa Kansas Michigan Minnesota Missouri Nebraska North Dakota Ohio West Virginia and Wisconsin.

4 Alabama Florida Kentucky Louisiana Mississippi North Carolina South Carolina Tennessee and Virginia.

5 California Colorado Idaho Montana Oregon Utah Washington and Wyoming.

tional equipment. As a consequence, the Voluntary Hospitals were overcrowded and their financial resources were exhausted.

The economic conditions following the World War had caused the wealthy and middle classes to decrease or suspend their gifts to Voluntary Hospitals, which were then forced to seek contributions from the industrial and low wage groups. To meet the financial crisis, two types of hospital plans were developed—contributory or “poor men’s” schemes, and provident or “middle class” schemes. A committee appointed to investigate the plight of the Voluntary Hospitals considered the inclusion of hospital service under the National Health Insurance but advised the extension of the contributory and provident schemes to provide the funds necessary to maintain the Voluntary Hospitals.

In the meantime Poor Law Hospitals with government assistance were developing a bed capacity twice that of the Voluntary Hospitals. Antagonism on the part of the poor toward Poor Law Hospitals was lessened because of improvement in facilities and the introduction of some free choice of physician. In 1929 the Local Government Act transferred these institutions to county and borough councils and by removing the “destitution” test threw them open to general service for the community. In fact, the regulations were such that these hospitals were opened to practically all the inhabitants of the administrative area in which they are located with the only stipulation that the patient be charged the cost of maintenance, subject to his capacity to pay.

The important effect of the appropriation of the Poor Law Hospital by the county or borough council was that the hospital became an integral part of the public health service under the supervision of the medical officer of health. As of April 1935, 42,082 general hospital beds had been appropriated by the local councils. In addition, a number of appropriations were made of children’s hospitals, municipal institutions, tuberculosis hospitals and others.

The change in the nature of the Poor Law Hospitals and the placing of power, responsibility and financial means in the hands of the local authorities will have an important effect on the future status of hospitals in England. The changed relations with the public are forcing changes in the attitude of the medical profession toward the hospitals. The Voluntary Hospitals were the training ground of the medical profession. In return for staff appointments, physicians rendered medical services without charge. Since the majority of the patients in Voluntary Hospitals are now paying, the British Medical Association recommends the introduction of pay beds and set forth the following policy.¹

Although the medical profession will gladly give, as always its services gratuitously to those who cannot afford to pay for them, it is inequitable to require it to give its services without

remuneration in voluntary hospitals which treat persons able to pay, and which in practice collect payments from a large number of their patients. The field of private practice has inevitably contracted, with the result that consultants, and in particular the younger consultants, are finding it increasingly difficult to secure and maintain a standard of living which represents a reasonable reward for their services and which enables them to maintain the highest possible standard of professional efficiency. In the view of the B. M. A. there should be remuneration of the medical staff in respect to all medical services in hospitals for which payment is made, directly or indirectly—by contributory schemes, local authority, employer or patient.

The British Medical Association has steadfastly maintained that the community will be served best if the hospital devotes itself exclusively to consultant and specialist service. Furthermore the association, in condemning the break in the relations between the general practitioner and the patient when the patient enters the hospital, urges the establishment of a new type of hospital called the “home hospital,” to be introduced where the treatment is such as can be given by a general practitioner but which for any reason cannot well be given in the home, these “home hospitals” to be staffed by local general practitioners. It also recommends that admission to a general hospital or to the outpatient department be only on the recommendation of a general practitioner.

With regard to the new Council Hospitals, provisions have been made to prevent encroachment on private practice. All medical officers appointed must be full-time officers and cannot engage in private practice. Thus the British Medical Association, believing that the voluntary hospital and the general practitioner form the keystone of all medical service, is striving to assure their continued existence in the interest of the public and the medical profession.

The medical profession and the hospitals in the United States may derive some guidance from the trend in England. What would happen to the general and special practitioners in the private practice of medicine and to private hospitals of the United States if county hospitals here were permitted to accept patients without any regard to their financial responsibility? Such a condition has actually threatened California in recent years. How long would it be before the limited practitioner became merely a salaried employee of lay boards in charge of county hospitals? What would become of the community investment in non-tax-supported or voluntary hospitals when the chiseling campaign of county controlled competition began? Is it worth while to alienate and destroy the sympathetic and charitable interest of the community in voluntary hospitals that obtains today? Who would maintain the quality of medical care and hospital practice if the medical profession, because of salaried positions and political red tape and regulations, became impotent to safeguard and advance the quality of the medical service? Perhaps economic manipulation of the voluntary hospitals is the first long step toward state managed medicine.

¹ The British Medical Association and the Voluntary Hospital Brit J supplement 1: 1647 (June 13) 1936

LOSS OF PROTEIN DURING FASTING

The animal body differs from a mechanical heat engine in that, during the life of the organism, there occurs constantly some oxidation of material with the production of heat whether or not fuel in the form of food is provided. As it is an old observation that the living organism can withstand deprivation of energy-yielding food for a considerable period, it follows that total inanition represents the withdrawal through combustion either of excess materials previously stored in the body or, in the absence of these, of substances entering into the essential structure of the body. The various aspects of the metabolism of fasting have been worked out from experimental studies both on human subjects and on animals. Following the withdrawal of food, the reserve carbohydrate in the form of glycogen is first used up, then the stored fat is called on as a source of vital fuel, with the result that in a starved animal the fat depots have been largely depleted. The nitrogen output representing the protein metabolized promptly falls to moderately low values, where it remains until the terminal rise. Since an appreciable output of nitrogen persists despite the lack of intake of protein, it is reasonable to believe that body protein is being metabolized. The particular source of this protein is significant.

An attempt to apportion to certain organs and tissues their relative and absolute shares in the total loss of protein from the body during fasting has been reported recently by Addis, Poo and Lew.¹ Two large groups of albino rats of similar age, sex and body weight were studied: one group was used immediately as a control and the second was subjected to analysis after a fast of seven days, during which only water was given. The total protein of the entire body and of most of the organs showed a decrease after the fasting period. The muscle, skin and skeleton together account for almost two thirds of the total protein lost from the body. Both the liver alone and the alimentary tract, pancreas and spleen together account for about one sixth of the total protein lost. However, when the proportion of their own protein lost by the various organs and tissues is calculated, the results are striking. In the course of a fast of seven days the liver lost 40 per cent of its protein, the alimentary tract 28 per cent, the kidney, blood and heart each about 20 per cent, the muscle, skin and skeleton together 8 per cent, and the brain 5 per cent. Although the muscle, skin and skeleton together lose only a small proportion of their total protein, these tissues account for the major part of the protein lost during the period of inanition because of their large relative mass in the body. On the other hand the liver, and to a less extent the kidneys, blood and heart, show a surprising decrease in the proportion of their own protein during inanition. The eyeballs, testes and adrenal glands lost no protein.

A subsequent determination of the loss from the liver after a fast of but two days showed that 20 per cent of the protein of this organ had disappeared. The observations thus indicate that so far as protein is concerned the liver "may be a storage depot for use in time of need." However, the conclusion is expressed that decrease in function and incipient atrophy may account for the observed loss from the heart, kidney and alimentary tract. In view of the relatively large loss of their protein shown by the liver, heart and kidneys, the teleologic suggestion that the organs most essential for life are spared in great emergencies may well be questioned.

Current Comment

CONSTITUTIONAL FACTORS IN DISEASES OF THE CARDIOVASCULAR-RENAL SYSTEM

In an address before the Medical Section of the American Life Convention last June, Pearl² advanced three lines of evidence bearing on the constitutional factor in cardiovascular-renal diseases. A study was made of the pedigrees of three families with reference to the incidence of cardiovascular-renal diseases. Each of these families showed considerably greater frequency of disease of this group than is found in the general population. This fact in itself establishes a presumption that heredity has played a part in determining the incidence of cardiovascular-renal disease in these families. Pearl also cites the differences in anthropometric measurements of cardiac and noncardiac patients, which has been reported elsewhere and previously commented on in these columns.³ Finally the relation between the general biologic constitution of the individual and the incidence of cardiovascular-renal diseases may be approached in still another way. In an analysis of the pedigrees of 640 patients taken without selection from the author's records, 285 had some form of cardiovascular-renal disease and 362 were completely free of any trace of these diseases. When the two groups were studied with regard to their general health, it was found that 72.9 per cent of the cardiovascular-renal patients had enjoyed good health up to the time of record but that 81.2 per cent of the other group had been similarly healthful. The difference in favor of the latter group is 3.7 times its probable error and therefore is probably significant statistically. The general picture that emerges, he believes, is that a group of patients with some form of cardiovascular-renal disease, when compared with a group of patients without any such disease, exhibit as a group a definitely lower level of vitality not only individually but also with respect to the immediate families. This lower vitality level expresses itself in various ways, such as by definitely poorer family health up to the time of record, by greater mortality in proportion to the number exposed in the kinship class, and by fewer total life years, experienced and expected.

¹ Pearl Raymond, Constitutional Factors in Diseases of the Cardiovascular Renal System. Proc. 26th Annual Meeting of the Medical Section of the American Life Convention, June 1936, p. 12.
² Constitution and Heart Disease, editorial J. A. M. A. 101: 1 (Jan. 19) 1935.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series was the thirty-second dramatized cooperative broadcast under the title *Your Health*. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night to serve the American people in sickness and in health."

The program is on the Red network and Pacific network of the National Broadcasting Company.

It should be noted that a station may take the program, or not. If a local N B C station is not broadcasting the program *Your Health*, it is possible that the management may be induced to broadcast the program if it receives evidences of local interest. The committee on education or other appropriate committee of the local medical society might take this matter up with the station management and tender cooperation in giving the program local publicity.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each weekly issue of *THE JOURNAL*. Topics and speakers for the next three broadcasts are as follows:

October 20 Arthritis. Morris Fishbein M D
October 27, Help for the Hard of Hearing W W Bauer M D
November 3 Community Sanitation Morris Fishbein M D

The time of the broadcast is Tuesday afternoon at 5 o'clock eastern standard time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Pediatric Meeting—The Academy of Pediatrics, region IV, will hold its annual meeting at the San Francisco County Medical Society Building, San Francisco, October 22-24. Speakers will include:

Dr. Williams McKim Marriott, Hypoglycemic Syndrome in Childhood
Dr. John M. Rector, Acute Sepsis in Infancy
Dr. James F. Rinehart, Vitamin C in Rheumatic Fever
Drs. Samuel Hurwitz and Sidney N. Zuckerman, Cervical Adenitis Treated with X Rays
Earl F. Meyer, Ph D, Neurotropic Viruses and the Diseases Caused by Them

Arrangements have also been made for a round table on the prophylaxis of communicable diseases and ward rounds to Stanford, University of California and Children's hospitals. Attendance at the Stanford-University of Southern California football game will conclude the meeting.

DISTRICT OF COLUMBIA

Society News—The Baltimore City Medical Society will present the program before the Medical Society of the District of Columbia, October 28. Speakers will include Drs. John T. King on "Recent Cases of Isthmus Stenosis of the Aorta", George H. Yeager, Treatment of Peripheral Vascular Disease by Passive Vascular Exercise, and Harry C. Hull, "Perforative Gastric and Duodenal Ulcers."

University News—Dr. Richard P. Strong, professor of tropical medicine, Harvard University Medical School, Boston, will deliver the Smith-Reed-Russell lecture at the George Washington University School of Medicine, October 22, on "The Dysenteries." Dr. Walter Schiller of the University of Vienna and Reuben Kahn, D Sc., Ann Arbor, addressed the

students and faculty, October 1, on "Morphology of Ovarian Tumors" and "Immunity in Syphilis" respectively. Rudolph J. Anderson, Ph.D., New Haven, Conn., will conduct a seminar, October 23, on "The Chemistry of the Acid-Fast Bacteria."

Health at Washington—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended October 3 indicate that the highest mortality rate (184) appears for Washington and for the group of cities as a whole, 10.2. The mortality rate for Washington for the corresponding period last year was 14.5, and for the group of cities, 10.1. The annual rate for eighty-six cities for the forty weeks of 1936 was 12.2 as against a rate of 11.4 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

FLORIDA

Addition to Board of Health Building—Construction on a new three story addition to the State Board of Health Building, Jacksonville, was begun September 10. The addition will cost \$25,000.

Society News—Dr. Alvin J. Wood, St. Petersburg, addressed the Pinellas County Medical Society in St. Petersburg, August 21, on "Progress in Medicine."—At a meeting of the Tri-County Medical Association (Highlands, Hardee and DeSoto counties) in Wauchula, recently, Dr. Joseph Halton, Sarasota, discussed x-ray therapy.

GEORGIA

Society News—At a meeting of the Fulton County Medical Society in Atlanta, October 1, Dr. Madison Hines Roberts presented "A Study of Mastoid Infection in Children." A resolution was unanimously approved at a meeting of the society, September 17, proposing the construction of a new building for the Atlanta Academy of Medicine and Dentistry.

New Medical School Building—Construction began September 30 on a new building at the University of Georgia School of Medicine, Augusta, to house the departments of physiology and pharmacology and biochemistry. There will be space for an auditorium with a seating capacity of 350. The cost will be between about \$75,000, unequipped. The ground floor of the main medical school building has been renovated to house the department of pathology in the north end while the entire third floor is now occupied by the departments of anatomy and microscopic anatomy.

ILLINOIS

Society News—Physicians employed by the Illinois State Department of Public Welfare have organized the Physicians' Association "for the betterment of the medical service in the various state institutions." At a general meeting, September 16, Dr. John J. Madden, Kankakee, was chosen president and Dr. Joseph Marcovitch, Jacksonville, secretary.—At a meeting of the Lee County Medical Society, October 5, Dr. Archibald L. Hoyne, Chicago, discussed infantile paralysis.—The Will-Grundy County Medical Society was addressed at Joliet, October 7, by Dr. Abraham R. Hollender, Chicago, who read a paper on "Vasomotor Rhinitis—Evaluation of Therapeutic Procedures with Special Reference to Ionization."—Dr. Harry M. Hedge, Chicago, addressed the Carroll County Medical Society October 13 on "Dermatologic Conditions Seen by the General Practitioner."

Chicago

Sir Joseph Barcroft Gives Lectures—Sir Joseph Barcroft, professor of physiology, University of Cambridge, England, gave two lectures at the University of Illinois College of Medicine, September 29-30, his subjects were "The Genesis of Respiratory Movements" and "The Effect of the Composition of the Blood on Mental Properties."

The Billings Lecture—Dr. Henry A. Christian, Hersey professor of the theory and practice of physic, Harvard University Medical School, Boston, will deliver the third Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the Institute of Medicine of Chicago at a joint meeting with the Chicago Society of Internal Medicine, October 26, at the Palmer House. His subject will be "Edema, Diuretics, Diuresis."

Society News—The Chicago Roentgen Society was addressed, among others, by Dr. Stuart W. Harrington, Rochester, Minn., on "The Diagnosis and Treatment of Diaphragm-

matic Hernia'—Dr Louis K. Guggenheim St Louis, addressed the Chicago Laryngological and Otological Society, October 12 on "The Ontogenetic Approach to the Pathology of Deafness"—The presidential address was delivered before the Chicago Pathological Society October 12 by Dr Carl W. Apfelmach on "Modern Concepts of Cirrhosis of the Liver"—The Chicago Neurological Society was addressed October 15, among others, by Drs Isidore Finkelman and Daniel Hafiron on 'Observations on the Circulating Blood Volume in Schizophrenia, Manic Depressive Psychosis and Epilepsy'—Dr Max L. Folk, among others, will present a preliminary report on 'Paracentesis and Atropine in the Treatment of Optic and Retinal Atrophies' before the Chicago Ophthalmological Society, October 19—Dr Samuel W. Becker will discuss 'Relation of Allergy to Dermatology' before the Chicago Society of Allergy, October 19—At a meeting of the Chicago Pediatric Society, October 20 Robert H. Gault, Ph.D., Evanston, will read a paper entitled 'Enlarging the Usefulness of the Vibrotactile Senses'

INDIANA

Personal—Dr Henry C. Rogers, Rockville, observed his ninety-second birthday August 16—Dr Hubert Gros Delphi, has been named secretary of the Delphi board of health, succeeding the late Dr William R. Quick.

New Headquarters for Society—An auditorium seating 500 and a permanent club room in the Antlers Hotel constitute the new home of the Indianapolis Medical Society. Members of the society and their wives and guests were given a tea by the hotel management, October 13, prior to the dinner meeting of the society, which was the first in its new home. At this dedicatory session Dr Virgil E. Simpson, Louisville, discussed the U. S. Pharmacopeia. Drs John H. Warvel and Cecil L. Rudesill will read papers on insulin protamine before the society, October 27, at a joint meeting of the society with the Methodist Hospital Staff Society, October 20, Dr Goethe Link, among others, will speak on diseases of the parathyroids.

IOWA

Tick Survey in Thirty-Five Counties—Financed by social security funds, a tick survey was carried on during July and August to determine the prevalence of the common dog tick and other ticks in different parts of the state and the percentage of ticks that harbor the spotted fever virus. The work was sponsored by the state department of health in cooperation with Carl J. Drake, Ph.D., U. S. Public Health Service, stationed at the Rocky Mountain spotted fever laboratory, Hamilton, Mont. Thirty-five counties including those from which one or more cases of the disease have been reported in the last three years, were studied. Among 800 ticks shipped to Montana, 359 were alive on arrival. These ticks representing thirty-one different localities in Iowa, were identified and tested for evidence of harboring the spotted fever virus or other infection. Twenty-four of the tests with guinea-pigs proved negative. Four of the tests were rendered void because the guinea pig 'died of an intercurrent infection or had some reaction which suggested infection'. One test showed the presence of tularemia infection; the ticks concerned were collected in Walnut State Park, Polk County, Iowa, a few miles from Des Moines. One test was incomplete at the time of the report, and the guinea-pig in the remaining test showed fever of undetermined origin. It is expected that further study may throw light on the percentage of ticks harboring the virus of Rocky Mountain spotted fever in this region.

LOUISIANA

Personal—Dr Raymond L. Gregory, formerly of Iowa City, has been appointed assistant professor of medicine at the Louisiana State University Medical Center, New Orleans, it is reported.

Graduate Teaching—The Louisiana State Medical Society is sponsoring graduate lectures in obstetrics in cooperation with the Louisiana State Board of Health. Financed by social security funds, the courses are given in each district for five consecutive evenings and consist of lectures, motion picture demonstrations, consultation conferences and general discussions. The first lectures of the series were given in Minden, October 4-9 and the second in Ruston, October 12-16. Subsequent lectures will be given as follows: Bastrop, October 26-30; Hammond, November 2-6; Natchitoches, November 9-13; Opelousas, November 16-20; Jennings, November 30; December 4; Franklin, December 7-11; and Donaldsonville, December 14-18. Lecturers include Drs Joseph W. Reddock,

Arthur Cairre, Philips J. Carter, Peter Graffagnino, Edward L. King and Walter E. Levy, all of New Orleans and Clifford R. Mays, Shreveport.

MARYLAND

Personal—Dr Humphrey Warren Buckler, since 1905 president of the Maryland State Tuberculosis Sanatorium Commission, was elected president, August 13, succeeding the late Charles H. Knapp.

Census of Crippled Children—A census will be made of crippled children in Maryland to diagnose their disabilities and to determine the need of statewide clinics, the plan to include hospitalization and after-care of children requiring assistance. Only children financially unable to pay for medical care will be eligible for the service, the selection of cases to be made jointly by the local welfare board and the family physician. The Medical and Surgical Faculty of Maryland has approved the program, which will be carried out by the Crippled Children's Service of Maryland (Board of State Aid and Charities).

Course for Training in Syphilis Control—The Johns Hopkins School of Hygiene and Public Health and the Johns Hopkins University School of Medicine, Baltimore, have entered into a joint arrangement with the U. S. Public Health Service whereby a limited number of public health personnel may secure special training for the control and clinical management of syphilis. According to the *Health Officer*, an elective course will be offered this year for students in the school of hygiene. In addition, the surgeon general of the health service will recommend six physicians who have been selected by state and local health officers for special training in venereal disease control. These graduate students will be admitted to a course in clinical syphilology and may be paid the regular fellowship stipend from social security allotments for personnel training. The university also offers one fellowship for a one or two year term at an annual stipend of \$1,800 without maintenance. The public health trainees will be assigned to duty in the syphilis clinic at the hospital. Dr Joseph Earle Moore, associate in medicine at the medical school, will direct the work.

MASSACHUSETTS

Graduate Courses—The fourth annual graduate extension course, presented in the various districts of the state under the auspices of the committee on postgraduate instruction of the Massachusetts Medical Society, has been opened. The chairmen and the courses are as follows:

Dr Howard M. Clute, Boston, Acute Abdominal Emergencies
Dr Sidney C. Wiggan, Newton, Anesthesia
Dr Frank R. Ober, Boston, Arthritis
Dr William P. Murphy, Boston, Blood Diseases
Dr Robert B. Greenough, Boston, Cancer
Dr Everard Lawrence Oliver, Boston, Dermatology and Syphilis
Dr Elliott P. Joslin, Boston, Diabetes
Dr Paul D. White, Boston, Heart Disease
Dr Frederick T. Lord, Boston, Disease of the Lung
Dr Donald Munro, Boston, Neurological Surgery
Dr Harry C. Solomon, Boston, Psychiatry
Dr Chester M. Jones, Boston, Stomach and Duodenal Ulcer

MICHIGAN

Personal—Dr Roy C. Lintner has resigned as physician at the state reformatory at Ionia and has been succeeded by his assistant, Dr Victor F. Kling. George F. Forster, Ph.D., professor of biology, Olivet College, has been appointed bacteriologist to the Michigan State Department of Health, he will be on a leave of absence from the college for one year; it is reported.

Hospital News—The new Jackson County Isolation Hospital, Jackson, was formally opened August 2; it was erected at a cost of \$90,000—A new series of conferences for the general practitioner opened October 1 at the Receiving Hospital, Detroit. In addition to the usual one hour devoted to the clinical pathologic conference fifteen minutes will be given over to the presentation of the gross specimens from the necropsy material and operative clinic, and forty five minutes to a general clinic.

Changes in Health Officers—Dr Francis B. Carroll, Battle Creek, has been appointed health officer of Van Buren County—Dr Kurt C. Becker, Toledo, Ohio, has been named district health officer with headquarters at Royal Oak. He succeeds Dr Charles H. P. G. Benning—The appointment of Dr David Littlejohn, head of the health unit in Michigan, as health officer of Chippewa County has been announced—Dr Lloyd H. Gaston, assistant health commissioner of Marquette, and Richland County, Ohio, has been placed in charge of district health unit 7 of the Couzens Foundation; his headquarters will be in Gladwin, succeeding Dr Eldred A. Tice.

MINNESOTA

Personal—Dr Cecil J Watson, Minneapolis, has been appointed associate professor of medicine at the University of Minnesota Medical School, Minneapolis, effective September 1.—Dr John A Malmstrom has resigned as health officer of Virginia to engage in private practice.—Dr Thomas E Broadie has been appointed superintendent of Ancker Hospital, St. Paul, succeeding the late Dr Seymour R Lee

Society News—The Nicollet-Le Sueur and the Blue Earth county medical societies were the guests of the St Peter State Hospital, September 2, Dr Alfred W Adson Rochester, discussed indications for sympathectomy in cases of essential hypertension.—The Minnesota Academy of Medicine was addressed in Minneapolis October 7 by Drs Arnold Schwyzer, St Paul, on "Chordoma," and Samuel E Sweitzer and Carl W Laymon, "Severe Cutaneous Reactions to the Barbiturates"—Dr Chauncey N Borman will discuss "Roentgen Diagnosis of Spontaneous Internal Biliary Fistula and Gallstone Obstruction" before the Hennepin County Medical Society, October 21, and Dr Cyrus O Hansen, "Coutard Method of X-Ray Treatment." Dr Walter C Alvarez, Rochester, addressed the society, October 1 his paper was entitled "Helpful Hints in the Diagnosis of Puzzling Types of Indigestion"

MISSOURI

Society News—Dr Marriott T Morrison discussed "Treatment of Gonorrhea in the Male" before the St Louis County Medical Society, September 23.—The South Central Counties Medical Society was addressed in Houston, August 6, by Drs Duff S Allen, St Louis, on "Differential Diagnosis of Acute Abdominal Conditions" and Carliss Malone Stroud, St. Louis, "Allergy"—Dr Austin A Hayden, trustee, American Medical Association, Chicago, showed a motion picture film depicting the activities of the office of the Association at a meeting of the St. Louis Medical Society, September 15

NEW JERSEY

Scarlet Fever Closes School—The grade school in Parsippany was closed September 30 by the Parsippany-Troy Hills Township Board of Health because of three cases of scarlet fever among the pupils, according to the New York Times. All other public gatherings were banned by the board of health

Society News—At a joint meeting of the Bergen County Medical Society with the Bergen County Pharmaceutical Association in Englewood, September 29, Dr Arthur C De Graff New York, spoke on "How Can the Practicing Physician Know the True Therapeutic Value of Drugs Recently Introduced in Medicine?" and George C Schicks, Ph C, assistant dean, New Jersey College of Pharmacy, Rutgers University, Newark, "Better Understanding of Official Medication"—Dr Herbert F Traut, New York, addressed the Hudson County Medical Society in Jersey City, October 6, on "Cardiac Complications in Pregnancy"

Progress on Medical Center at Jersey City—The cornerstone of the medical building of the Medical Center of Jersey City was laid by President Roosevelt, October 2. The ceremony marked the half-way point in the program financed by Jersey City, Hudson County and the Public Works Administration and designed to make the institution the third largest medical center in the United States. The medical building will be one of seven large structures of the skyscraper type and several smaller buildings. It will cost \$4,545,000 and is being erected on the site of the old Jersey City Hospital. Ultimately the Medical Center will have a capacity of 2,000 beds. Completed units include the surgical building, the staff house and the nurses' building and ground has been broken for a new eighteen story building to include the present six story medical unit and the twenty-three story surgical unit connecting wing. The Hudson County Tuberculosis Hospital, another unit, costing \$3,960,000 is complete except for furnishing and equipment. The Margaret Hague Maternity Hospital with facilities for 300 adults and 300 babies is also finished. The Out-Patient and Psychiatric Hospital financed by Jersey City and the PWA at a cost of \$2,500,000 and not yet under construction, is to be a ten story structure. The buildings are of steel skeleton construction, fireproof and of buff colored brick, with granite and terra cotta exterior trim. While the plan for the Medical Center originated in 1921 with Mayor Hague, who is still in office, the historical development of the center goes back to 1881, when a small hospital was erected by the city. A more modern hospital was built in 1906 and in 1917 the cornerstone was laid for a second building and two stories were added to the old building. With the subse-

quent influenza epidemic the hospital was enlarged to include a nurses' home. In 1929 the cornerstone was laid for the twenty-three story surgical building, the highest structure in Jersey City, the ten story Maternity Hospital, and the seventeen story Nurses' home, which is both a training school and a residence.

NEW YORK

Foreign Licentiates in New York—At a meeting of the New York State Board of Regents, September 21, it was voted that on applications filed after October 15 no license issued by a legally constituted board of examiners in any foreign country will be endorsed until the applicant shall pass the licensing examination prescribed by law or regents' rule.

Society News—Dr Carter N Colbert, New York, addressed the Medical Society of the County of Nassau Mineola, September 29, on "The Etiology and Treatment of Polyneuritis in the Alcoholic Addict."—Dr Earl D Osborne, Buffalo, addressed the Medical Society of the County of Albany Albany, September 30, on "The Part of the General Practitioner in the Syphilis Control Program"

New York City

Hospital News—A revised announcement of a lecture course in dental medicine at Mount Sinai Hospital gives the name of Dr Seth Selig as the lecturer for March 11, 1937, on "Relationship of Arthritis to Focal Infection" instead of Dr Robert K. Lippmann. The announcement was published in THE JOURNAL, September 26

Brooklyn Cancer Institute Dedicated—The new Brooklyn Cancer Institute, a unit of King's County Medical Center, was dedicated with appropriate exercises, October 13. The institute is an independent clinical unit of the division of cancer of the city department of hospitals, with Dr William E. Howes as administrative clinical director. The five story brick building has been renovated with WPA funds and will provide accommodations for eighty-six patients, as well as treatment facilities, both radium and x-ray, for outpatients (THE JOURNAL, August 29, p 721)

Endorsement of Proprietary Hospitals—Sixty-two of the sixty-nine proprietary hospitals in the city have been endorsed by the department of hospitals for conforming with city regulations requiring standards of physical equipment and clinical and nursing service. The seven institutions not complying with the department's regulations have minor changes to make before they will be approved. The regulations, effected about a year ago, require that a responsible medical board including members of the local county medical society, be set up by each institution. Each approved institution now has this board, as well as a registered physician licensed by the state. Since the inauguration of the regulations, five proprietary hospitals have gone out of existence.

Comprehensive Study of Suicide—The clinical and socio-psychologic phases of the problem of suicide will be investigated in a study to be carried out in the psychopathic division of Bellevue Hospital. The recently organized Committee for the Study of Suicide, Inc., cooperating with the commissioner of hospitals, and the director of the psychiatric division, has worked out a plan of research to be conducted by a special staff. The funds for the work have been contributed by the committee and will be administered by the New York University Medical College, which is affiliated for teaching purposes with Bellevue Hospital. The daily average of seventy-five psychiatric and alcoholic admissions will afford an unusually abundant source of material for special psychologic study. A trained psychiatrist will be in charge of the clinical studies. All data incident to the study will be recorded for use in training young psychiatrists and advanced medical students. It is planned to hold periodic staff meetings to apprise staff members of the progress of the investigation and the most important clinical observations made (THE JOURNAL, April 11, p 1324)

OHIO

The Bunts Lecture—Dr Clay Ray Murray, associate professor of surgery, Columbia University College of Physicians and Surgeons, New York, delivered the Bunts Lecture at the Cleveland Clinic, October 6. His subject was "The Time Element in the Treatment of Fractures." The lecture is under the joint auspices of the clinic and the district fracture committee of the American College of Surgeons.

Pharmacy Exhibition—The history of pharmacy was depicted in an exhibit at the Cleveland Medical Library Auditorium October 16, presented under the auspices of the Northern Ohio Druggists Association, Academy of Pharmacy, School

of Pharmacy, department of pharmacology of Western Reserve University, Academy of Medicine and the Cleveland Medical Library Edward Kremers Ph.D., professor of pharmaceutical chemistry, University of Wisconsin, Madison, discussed "Source Material for History of the Apothecary Shop," and Dr James D Heard, professor of medicine, University of Pittsburgh, "Old Drugs in Old Jars"

Resolution Governing Medical Licensure—Graduates of medical schools in foreign countries applying for license to practice in Ohio must submit a complete transcript of all work done prior to graduation, according to a resolution adopted at a recent meeting of the Ohio State Board of Registration in Medicine. In case there is any difficulty in the evaluation of this material, the board shall require one year of internship in an approved hospital or one year of education in an approved medical school in the United States. Credentials of foreign applicants must be filed with the secretary of the board at least six months prior to examination.

PENNSYLVANIA

Emergency Medical Relief Service Abandoned—Emergency medical relief service as it had existed in Pennsylvania since December 1933 was abandoned by the State Emergency Relief Board as of September 19. A special session of the state legislature this year appropriated for relief purposes a sum much less than the amount requested and also fixed inflexibly the proportion of the total that might be spent for administrative costs, it was explained. A delegation representing the Medical Society of the State of Pennsylvania, the state nurses' association, the state dental association and the state pharmaceutical association met with representatives of the relief board August 14 to ask a more gradual transfer of the relief medical service from state to local responsibility. Governor Earle chairman of the board, asked the delegation to appoint a representative to meet later with the board to confer on the problem. At the August meeting it was pointed out that the relief medical service as administered since December 1933 had maintained a low morbidity and mortality rate and an almost complete freedom from neglect of the sick. In the twelve months July 1935 to June 1936 with an average of 288,000 families on relief the average cost per relief case for all medical care was 97 cents.

Philadelphia

Dr Eliason Appointed Professor of Surgery—Dr Eldridge L Eliason, professor of clinical surgery, University of Pennsylvania School of Medicine, has been appointed John Rhea Barton professor of surgery to succeed the late Dr Charles H Frazier. Dr Eliason was graduated from the University of Pennsylvania School of Medicine in 1905 and has been a member of the faculty since 1907 except for two years of army service during the World War. He became professor of clinical surgery in 1925 and was appointed to the same position in the Graduate School of Medicine in 1926. Dr Eliason is surgeon at the University, Presbyterian and Philadelphia General hospitals.

Pittsburgh

Graduate Courses—The eleventh series of practical courses presented by the Allegheny County Medical Society, Harrisburg, is now under way. Dr Howard A Power opened the first course, October 9 on operative obstetrics. The remainder of the series is as follows:

Dr David B Ludwig Office Gynecology
Drs Eben W Fiske Harold W Jacob Paul L Jenny and Jessie Wright Principles and Practice of Physical Therapy
Drs Lawrence G Benhauer and Bernhard A Goldmann Management and Treatment of the Syphilitic
Dr Edmund R McCusker Preventive Pediatrics Respiratory Disease in Infants and Children
Drs Charles Howard Marcy Leon H Hetherington and George W Hobson Recent Trends in the Treatment of Pulmonary Tuberculosis with Special Emphasis on the Use of Artificial Pneumothorax

TEXAS

Personal—Dr Robert J Rowe, Kaufman has been appointed a member of the state board of health to succeed Dr George W Cox, Del Rio, who resigned.—Dr Howard R Dudgeon Waco, president of the State Medical Association of Texas, was guest of honor at a dinner given by the McLennan County Medical Society in Waco September 8. Dr R. Spencer Wood president of the county society presided and speakers included the following former presidents of the state society: Drs Marvin L Graves and John H Foster Houston Samuel E. Thompson Kerrville, John O McRey-

nolds, Dallas and Don J Jenkins, Daingerfield.—Dr Lloyd B Sheffield has been appointed health director of the Dallas public school system succeeding Dr Edythe P Hershey, Austin, resigned. Dr Sheffield has been assistant health director for five years.

Tri-State Meeting—The thirty-first annual meeting of the Tri-State Medical Society (Louisiana, Arkansas and Texas) will be held in Longview, Texas, October 26-27, under the presidency of Dr Dunbar R. Baber, Daingerfield. The speakers will include:

Dr Oscar M. Marchman Dallas The Paranasal Sinuses as Focus of Infection
Dr Willis C. Campbell Memphis Physiological Principles Applied to the Treatment of Fractures
Dr Henry M. Winans Dallas, Undulant Fever
Dr Charles A. Wyatt Marshall Toxemias of Pregnancy
Dr Robert H. Millwee, Dallas Radiation in Cancer Therapy
Mr E. M. McDermott Dallas, Insurance Under Compensation Act.
Dr Walter L. Kitchens Texarkana The Isms and pathos of Medicine.
Dr Seale Harris Birmingham Relation of the Pituitary, Thyroid and Adrenal Glands to Hypo- and Hyperinsulinism.
Dr Roy Carl Young, Covington La. Forced Perivascular Spinal Drainage: a Valuable Therapeutic Procedure in the Treatment of Chronic Epidemic Encephalitis
Dr Shelby B. Hinkle Little Rock Ark. Obstetrical Case Management.
Dr William Hibbitts, Texarkana Prostatic Resection.
Dr Leonce J. Kosminsky Texarkana Medical Economics
Dr Stanley George Wolfe Shreveport Newer Aspects in Diagnosis and Treatment of Congenital Syphilis
Dr Rosco G. Leland, Director, Bureau of Medical Economics, American Medical Association Chicago, will deliver the annual oration on "Economics and the Ethics of Medicine."

VIRGINIA

Personal—Dr Edward M. Parker, Emporia, was guest of honor at a dinner meeting of the Fourth District Medical Society in North Emporia. Dr Wright Clarkson, Petersburg was toastmaster and speakers included Drs James Morrison Hutcheson, Richmond, Cecil E. Martin, North Emporia, Rufus L. Raiford, Franklin, and Guy M. Naff, North Emporia.—Dr Nathan W. Stallard, Dungannon, recently completed fifty years of medical practice.

WEST VIRGINIA

Sanatorium Dedicated—A forty bed sanatorium for Ohio County was dedicated at Roney's Point, near Wheeling September 17, during the annual meeting of the West Virginia Tuberculosis and Health Association. The building is 1,200 feet above sea level and is one story high with provision for a second story if necessary. It cost \$170,000, of which the county provided \$30,000, the Federal Public Works Administration \$43,384 and thirty-five citizens of Wheeling guaranteed the remainder, which is to be repaid by the county.

Society News—Dr Francis A. Scott, Huntington, addressed the Cabell County Medical Society, Huntington, September 10 on "Orthopedic Treatment of Arthritis."—Speakers at the meeting of the Kanawha Medical Society in Charleston, September 8 were Drs William R. Geraghty and William S. Love Baltimore, on "Fractures of the Skull and Their Treatment" and "Functional Heart Disease" respectively.—Dr William C. McCally, Cleveland, addressed the Monongalia County Medical Society, Morgantown, September 1 on "Infections of the Hand."—Dr Walter M. Simpson Dayton, Ohio addressed the Ohio County Medical Society, Wheeling, September 25, on "Progress in Artificial Fever Therapy."

WISCONSIN

State Survey of Venereal Disease—Surgeon Oliver C. Wenger of the U. S. Public Health Service recently completed a survey of the venereal disease activities of the Wisconsin State Board of Health. In his report to the surgeon general he records that the number of patients with dementia paralytica entering the state psychiatric hospital has decreased from 12 per cent in 1913 to 5 per cent in 1935. In 1915 31 per cent of the pupils in the state school for the blind became blind as a result of gonorrheal ophthalmia whereas in 1936 only three of 157 pupils were entered on this diagnosis. The state has thirteen clinics widely scattered and in communities where free facilities are not available indigent patients are treated by private physicians at the expense of the community. Free laboratory service is maintained by the state. A review of case records of the clinics and interviews with physicians, nurses and social workers showed a surprisingly small number of early cases, the report said in fact in only one clinic were any primary cases reported. Dr Wenger also pointed out that most patients remain under treatment and observation till they have received a maximum amount of treatment. Dr Wen-

ger emphasized the social hygiene program carried on in the schools and colleges since 1919 and attributed to it in great measure the success of the entire program. Two workers are employed full time in lecturing on social hygiene in the schools. In the calendar year 1935 the man worker made nearly 500 talks to a total attendance of more than 25,000 men and boys, the woman worker 265 talks to nearly 16,000 women and girls. Dr Wenger recommended that the state board of health have on its staff a physician who would devote his full time to venereal disease control. He also suggested an advisory board made up of specialists in urology, syphilology, laboratory diagnosis and related fields, and the employment of more lecturers for the social hygiene program.

GENERAL

Academy of Physical Medicine—The Academy of Physical Medicine will hold its annual meeting at the Hotel Statler, Boston, October 20-22. The president, Dr Frank H. Krusen, Rochester, Minn., will speak on "The Present Status of Physical Medicine." Dr Stafford L. Warren, Rochester, N. Y., will present the Arthur H. Ring Foundation Lecture on "Fundamental Principles Concerned in the Treatment of Gonococcus Infections by Artificial Fever Therapy." Other speakers on the program will include Sir Robert Stanton, Woods, London Hospital, London; Dr William Benham Snow, New York; Dr Abraham Myerson, Boston; Dr Rebekah Wright, Boston; Dr William J. Schatz, Allentown, Pa.; and Dr William F. Roberts, minister of health, St. John, N. B.

Memorial to Dr Ricketts—Funds are being solicited by Northwestern University to establish a foundation in memory of Dr Howard Taylor Ricketts, who died in 1910 from typhus fever incurred in Mexico while engaged in a study of its mode of transmission. Dr Ricketts graduated from Northwestern University Medical School in 1897. He served as fellow in dermatology at Rush Medical College. In 1903 he received an appointment as instructor and later as associate professor in pathology and bacteriology at the University of Chicago. In 1910, the year of his death, he accepted an appointment as professor of pathology at the University of Pennsylvania School of Medicine. Contributions to the fund which it is hoped, will total \$100,000, will be deposited with the trustees of Northwestern University for conservation and administration. The fund will be permanent, only the income to be utilized.

Association of American Medical Colleges—The forty-seventh annual meeting of the Association of American Medical Colleges will be held in Atlanta, Ga., October 26-27. The first day's program will be as follows:

Dr James N. Baker, Montgomery, Ala., Need for Closer Integration of the Agencies Interested in Medical Education and Licensure.

Edwin E. Renke, Ph.D., professor of biology and secretary of the faculty, Vanderbilt University, Nashville, Liberal Values in Pre-medical Education.

Ralph J. Gilmore, Ph.D., professor of biology, Colorado College, Colorado Springs, Liberal Arts Background for Medicine.

Dr Frank L. Babbott, Jr., New York, What Medical Colleges Expect Hospitals to Do to Continue the Education of the Intern.

Dr Claude W. Munger, Valhalla, N. Y., Continued Education of the Medical Student During His Internship.

Tuesday's program will include a presentation of teaching objectives and methods in Emory University School of Medicine. Wednesday there will be a symposium on integration of the medical curriculum, presented by Drs George S. Eadie, Durham, N. C.; William Boyd, Winnipeg, Man.; Jonathan C. Meakins, Montreal, Que.; Edward W. Alton Ochsner, New Orleans; and Herman G. Weiskotten, Syracuse, N. Y.

American League Against Epilepsy—Members of the International League Against Epilepsy living in the United States or Canada have organized an American branch of the league with the following officers: Drs William G. Lennox, Boston, president; Mynie G. Peterman, Milwaukee; and Temple S. Fay, Philadelphia, vice presidents; Frederic A. Gibbs, Boston, secretary; and Walter B. Cannon, Boston, vice president for America of the international league. The chief qualification for membership is an active interest in the problem of epilepsy or in the care and treatment of epileptic patients. Persons who are not physicians may be admitted up to 10 per cent of the membership. Dues which include membership in the international league are \$3.75 for four years. The next meeting of the American branch will be during the annual session of the American Medical Association in Atlantic City in June 1937. Interested persons should communicate with Dr Gibbs, 910 Medical Building, Boston City Hospital, Boston. Dr Lennox is president of the international league which will hold its next meeting with the International Neurological Congress in Copenhagen.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 5 1936

The Treatment of Maxillofacial War Injuries

In 1932 the army council appointed a committee to report on the treatment of the wounds of the jaws and face that occur in modern warfare. Among the members of the committee were Sir Harold Gillies, the leading plastic surgeon in this country, Col J. P. H. Helliwell, formerly commandant of the army dental corps, Mr W. Kelsey Fry and Mr W. Warwick James, dentists who have devoted special attention to this subject. The report, based largely on the experience of the great war, can be described as the last word on the subject. The matters investigated were (1) the provision and equipment of special hospitals or departments for maxillofacial injuries, (2) general methods of treatment and (3) the training of dental officers in the principles of preliminary treatment in the field. The committee assumes that it would be practicable to give only first aid until the wounded man has reached the main dressing station, which may not be for some hours. It makes the following recommendations:

PRELIMINARY TREATMENT

In the early stages, preliminary treatment would be restricted to life saving and would chiefly be the prevention of suffocation and the arrest of hemorrhage. Simple instructions should be given on these points to all men collecting the wounded. The danger of suffocation is most commonly due to loss of control of the tongue. As the result of the injury, this may occur to such a degree that the air passages are obstructed. Posture is then of vital importance and stretcher bearers should not lay the wounded man on his back but on his chest, with the head hanging over the end of the stretcher. He should be kept so until passed into medical care. If he is able to walk, he must stoop well forward till he comes under treatment. The committee emphasizes the importance of keeping the tongue well forward, by which stretcher bearers may save many lives. This will also tend to check hemorrhage, but it may be necessary to plug wounds external to the mouth and also to apply digital pressure. At the regimental aid posts and advanced dressing stations little can be done beyond treatment for shock and hemorrhage, but the tongue should be kept forward if necessary by a suture or clip. The throat should be examined and cleared of foreign bodies.

TREATMENT BY THE SURGEON

At the main dressing or casualty clearing stations the surgeons should correct as far as possible displacement of the hard and soft tissues and fix them as early as possible, but without undue tension. When much bone is lost the raw ends should be covered by mucous membrane if practicable and the advisability of sewing mucous membrane to the skin at the margin of the wounds should be considered if this can be done without tension. Catgut sutures are the best. This suturing greatly reduces the extent and difficulty of later plastic operations, but injudicious overapproximation (which occurred in the war) should be avoided. War experience showed a high frequency of abscess formation in the lower jaw, and therefore the surgeon should consider the advisability of sub-mandibular drainage at the outset by inserting one or more tubes.

TREATMENT BY THE DENTAL OFFICER

There are two main principles: (1) conservation of injured teeth and loose fragments of bone, (2) fixation of displaced fragments of jaw in correct position. The dental officer should be most conservative with regard to extraction of teeth, because

of their importance in the retention of appliances. The exposed pulp of fractured teeth should if possible be removed at once when the teeth may be valuable in subsequent treatment. Unless a tooth is actually involved in the line of fracture, it usually should not be disturbed. The retention of partly detached fragments of bone concerns both the surgeon and the dentist. The recuperative power of the fragments is usually good and as a rule none should be discarded. The slightest attachment of periosteum is justification for retention of a fragment. As long as teeth are present in the fragments and in corresponding region of the maxilla, the dental officer should immobilize the fragments in normal occlusion by interdental wiring. Even if the whole dental region is lost, the molar fragments should be held in normal occlusion by this means. During intratracheal anesthesia the throat should be well packed with gauze until the jaws are ready to be wired together. If necessary a long stout stitch should be passed through the dorsum of the tongue and the ends secured and left until the reflexes are recovered. Owing to the great mobility of the fragments, care is necessary when manipulating a gag. The mandible should be held forward and upward. When this procedure is not possible, owing to an edentulous fragment or corresponding maxillary region, fixation will be more difficult. If the patient has unbroken dentures, these may be used as splints assisted by external bandages. Impression composition or gutta percha may be molded inside the mouth to control the fragments. The surgical wiring of fragments is absolutely contraindicated in all compound fractures of the mandible. As a rule, fractures of the maxilla are simpler to deal with than those of the mandible. The fragments can be supported by the mandibular teeth with the aid of an external bandage. If the fracture is on one side, the sound side can be wired to the mandible. If possible, it is better to arrange a support independent of the lower teeth, such as the modified Kingsley splint.

Liability of Nursing Home for Contraction of Puerperal Fever

In the house of lords (the highest court in this country) an appeal was heard with regard to the liability of a maternity home for a patient contracting puerperal fever in it. The home was a small one, containing only sixteen beds, and was administered by the county council of Lindsey, Lincolnshire. Some of the beds were in single rooms, known as private wards, for which a weekly charge of \$21 was made. For the beds in the public wards the charge was \$10. The patients were attended by their own physicians, but the council provided the nursing staff. June 30, 1933 a woman was admitted and on July 4 she developed a high temperature. Her physician diagnosed appendicitis and she was removed to Grimsby Hospital. The ward in which she lay and the nurses in contact with her were disinfected. It subsequently was found that she was suffering from puerperal fever. When this was known at the home, another disinfection took place—on July 5. In cases of puerperal fever, swabs are taken of the throats of all persons in contact with the patient to ascertain whether any one is a carrier. In this case no swabs were taken, as it was thought that the disinfection would render this useless. July 9 another woman was admitted. She developed a temperature of 100.6 on the following day, after her confinement. Puerperal fever was diagnosed.

July 12 the respondent in this appeal arrived. She had arranged for a private ward, but none was available and she had to go into a public ward. Nothing was said about the previous cases. She was delivered July 13. On July 16 four patients and on July 17 the respondent developed puerperal fever. She was removed to the hospital. The home was then closed. She brought an action against the council on the grounds of (1) breach of contract in not giving her a private

room, (2) negligence of their servants in not closing the home before her admission, and (3) failure to inform her or her medical adviser of the case of puerperal fever. The appellants pleaded that there was no breach of contract on their part and no negligence on the part of their servants or agents and that their only duty to her was to provide a competent medical nursing staff for the home, which they did. The jury found that there was a breach of contract in not supplying a private room and a breach of duty in administration, because swabs of the throats had not been taken and information as to the case of puerperal fever was not given. They gave damages of \$3,750. The case was taken to the court of appeal, where the judgment in the lower court was affirmed. A further appeal was then made to the house of lords.

The lord chancellor in giving judgment for the respondent said that the jury was justified in thinking that without taking swabs there was a grave risk that a carrier might be present and that until this was eliminated it was dangerous to admit a new patient. It was contended that even if there was negligence the appellants were not responsible in law but that the responsibility rested on their health officers, who controlled the administration of the home. He was unable to accept that view. The appellants were carrying on a maternity home and were inviting prospective mothers to use it. They therefore owed a duty to them to make the premises reasonably safe or, if there was any hidden danger, of which they ought to have been aware, to give those invited due notice. Also they were responsible in law for the mistakes of their agents. It had been argued that it had been decided that where a public authority carried on a hospital it was not responsible for mistakes in medical treatment or nursing, provided reasonable care was taken in appointing competent nurses and physicians. This had no application to the present case. The respondents did not provide medical attendance and there was no complaint that the nurses were wanting in skill. The complaint was that the appellants invited the respondent to a home which they ought to have known was in a dangerous condition and did not inform her. When a corporation acted through an agent it was liable for his mistakes whether he was a physician or belonged to any other profession.

Lord Elibank Heads the Osteopathic "General Council"

The collapse of the osteopaths' attempt to obtain official registration in this country has been described in previous letters. They have now set up "A General Council of Osteopaths" to regulate the practice of osteopathy. Standards of education and training are to be laid down, the creation of institutes for teaching is to be fostered, and a register of osteopaths is to be compiled. Provision is to be made for two members of the medical profession and two scientists to sit on the council. Lord Elibank, who in 1934 introduced into the house of lords the bill to regulate osteopathy, which was rejected, is to be the first president. It has always been possible in this country to obtain the support of persons of high social position for irregular cults of all kinds.

Sodium Nitrite Poisoning

The first cases of fatal poisoning due to sodium nitrite in this country have occurred. The victims were a chemical worker, aged 44, his wife, aged 42, and her daughter by a former marriage, aged 5. They died within two hours of dining. It appears that sodium nitrite had been used in mistake for common salt. The potatoes cooked for the dinner were noticed to be of a peculiar brown. The public analyst found in the organs evidence of sodium nitrite and of no other poison. He suggested that rhubarb which was eaten at the dinner would by its acidity quickly decompose the nitrite with evolution of toxic nitrous acid. It was supposed that the man

took away some nitrite from the works. The only use that he could have had for it was thought to be as a plant food. The poisoning of a family by sodium nitrite has previously been recorded in England, but all the affected persons recovered.

PARIS

(From Our Regular Correspondent)

Sept. 5, 1936

Organized Medicine Proposes to Aid State Social Program

At the last elections for members of the legislature, the Left parties, a combination of the Communists and the Socialists known as the "Front populaire," obtained the majority of votes. The new secretary of public health is making a laudable effort to improve health conditions in general and rural sanitation in particular. He has welcomed the aid of organized medicine in carrying out his program of extension of the benefits of preventive medicine to all classes of citizens. In the August number of the bulletin of the *Confédération des syndicats médicaux*, an organization which represents all the regional syndicates or societies aiming to look after the relations of organized medicine to the public, the question of the part to be taken by members of these societies in the proposed preventive medicine measures is discussed in detail. A circular sent to all physicians first quotes a resolution passed by the "syndicat" of the department of the Seine, in which Paris is situated, to the effect that "organized medicine is ready to assume technical responsibility, by collective contract for the organization and functioning of preventive medicine." Two methods have been proposed to fulfil this obligation: first, to appoint four or five medical officers for each department (there are eighty-six in France), who shall be responsible for all branches of preventive medicine, such as periodic health examinations preliminary or not to training for competition in sports, vaccinations, antepartum and nursing consultations, and so on. The other method is to confide the entire administration of the law to the local "syndicats" or county (departmental) medical societies, the latter being granted a certain sum annually by the government, which could be distributed to such members as had taken part in carrying out the provisions of the law.

The circular explains that only preventive medicine and not actual care of the sick or injured is to be regarded as constituting the duties of those who aid in the preventive medicine work. This means that most loyal cooperation on the part of all volunteers will be necessary if the profession is to take advantage of showing what organized medicine can do. It is proposed to begin the work in only a small number of departments, so as to ascertain what local modifications will be necessary.

In the collective contract between the "syndicats" and the secretary of public health, it is proposed to establish health centers in every city and smaller community, in which complete physical examinations will be carried out, these centers to serve also with the aid of specialists and laboratories as diagnostic agencies. Owing to the rapid development of the interest in sports in France, all those who wish to participate shall be obliged to be examined at regular intervals. Prophylactic vaccinations (variola, diphtheria, tetanus) are to be noted in a book to be kept by every schoolchild. Other duties of these public health centers are to give antepartum advice and examination and consultations for nurslings and infants, all of the latter also being recorded in a book to be kept by mothers. Every child and adolescent will be given a "livret de sante" or health record, in which all types of examinations will be noted. How practical it will prove to be for local medical societies to take charge of all these public health duties remains to be seen.

The Causes of Road Accidents

Some interesting statistics appear in the June Bulletin of the French Union of Tourist Associations. There are 2,075 first aid stations distributed over all the automobile highways of France. In spite of the rule that gives priority to a machine on the right when two automobiles have occasion to cross, the number of accidents remains higher than it ought to be. One reason is that speed regulations are seldom observed here. Motorcycle policemen who watch for speeders are almost unknown in France. In the 1935 statistics of the union, failure to observe the code (priority belongs to the machine on the right) and lack of prudence caused 50.9 per cent of the accidents. Next in order of frequency came skidding on dry roads 14.9 per cent, unknown causes 8.36 per cent, attempts to pass another car during the day 6.95 per cent, skidding on wet roads 6.51 per cent, bad condition of machine 6.19 per cent, faulty lighting or visibility 6.19 per cent, trying to pass another car at night 2.39 per cent, and physiologic (!) causes 1.88 per cent.

When the various modes of locomotion are considered, the accidents during 1935 can be placed in the following groups: automobiles 51.66 per cent, bicycles 20.86 per cent, motorcycles 11.38 per cent, pedestrians 7.15 per cent, unclassified 2.81 per cent, horses 1.38 per cent and airplanes 0.02 per cent. This second statistical study shows that in proportion to their number, more accidents were due to bicycles and motorcycles than to any other form of transport.

Results of 1,256 Sympathectomies

The surgery of the sympathetic nervous system is of comparatively recent date, hence the report of 1,256 operations made by Leriche and Fontaine at the June 10 meeting of the *Académie de chirurgie* is of interest. The largest number of operations were 273 on the cervical sympathetic, 178 lumbar sympathetic, 61 resections of the presacral nerve and 574 periarterial sympathectomies. The mortality has been minimal, one death in the 273 cervical and 3 per cent for the lumbar sympathectomies. The utmost precautions must be taken in operating on patients who have chronic infected ulcerations or a localized gangrene, by local disinfection, and prophylactic drainage. In cases of angina pectoris, good results can be obtained in 70 per cent of the cases, provided the coronary obliteration be not too far advanced. In three cases of megacolon, satisfactory results were obtained by combining removal of the superior and inferior mesenteric plexus with a bilateral lumbar sympathectomy. The relief of painful disorders of the extremities does not always follow a periarterial sympathectomy alone. It is often necessary to associate this operation with one on the "neuroglome" and on the *rami communicantes*. Vasomotor and trophic lesions, Raynaud's disease, scleroderma, chronic edemas, painful posttraumatic osteoporosis, delayed consolidation and chronic varicose and "essential" ulcers are cured in an impressive number of cases. Spasmodic paralyses can be greatly relieved by sympathectomy. The same is true for hyperhidrosis. An arteritis should never be treated by periarterial sympathectomy unless the vessel is permeable, i. e., not obliterated. If such should be the case, an *arteriectomy* should be combined with a sympathectomy. Resections of the popliteal and posterior tibial arteries are to be done with much caution. In case of obliteration of these vessels, only a lumbar sympathectomy should be performed. In thromboangitis, arterial resection and lumbar sympathectomy have given approximately the same, i. e., 55-58 per cent, good results. In this disease more lumbar sympathectomies than arterial resections were performed. In sclerosing arteritis the reverse was the case, the good results attaining a percentage of 76.4. The surgery of the sympathetic nervous system has a definite place but in order for it to be efficacious the indications must be well established and a thorough knowledge obtained of the physiopathology.

Only Drug Stores May Sell Medicinal Preparations

The French senate has just passed a bill making it a misdemeanor punishable by a fine of from \$2 to \$60 for the first and double for the second offense for any establishment other than a drug store to sell preparations which possess curative or preventive properties. This also applies to medicinal plants, which are sold at present in large quantities by department stores and street vendors.

Obligatory Antitetanus Vaccination in French Army

A study of the efficacy of vaccination against tetanus made by a committee appointed by the Academy of Surgery revealed that the incidence of tetanus following injury was considerably less in those who had had prophylactic injections of antitetanus serum. This report has made such an impression in military circles that the secretary of national defense, M. Daladier, has just issued an order making vaccination against tetanus obligatory for every soldier, as is antityphoid vaccination and that against variola.

International Congress of Hepatic Insufficiency

A large number of medical meetings at which all nations will be represented form an important part of the program for the world's fair of 1937 to be held in Paris. The Congress on hepatic insufficiency is to hold its meeting at Vichy Sept. 16-18, 1937, under the presidency of Prof. Maurice Loeper of Paris. The congress includes two sections, one on medicine and biology and one on medical treatment and hydrology. The secretary is Dr. J. Aimard, 24 Boulevard des Capucines, Paris.

Obstetrician Promoted in Legion of Honor

An amply merited honor has just been conferred on Professor Couvelaire, head of the Clinique Baudelocque at Paris. He was named a Commander of the Legion of Honor, an order founded by Napoleon, as a recognition of distinguished service to France.

Treatment of Adenopathy Secondary to Cancer of Tongue

A report of work at the Curie Foundation was made by A. Tailhefer at the June 24 meeting of the Académie de chirurgie. Of 110 cases of removal of the lymph nodes secondary to a cancer of the tongue performed between 1923 and 1931, eighty-four cases were selected for a study of end results dating back from five to twelve years since operation. In one of these eighty-four the primary neoplasm was a doubtful papilloma with normal lymph nodes. The other eighty-three cases were all positive for cancer on microscopic study. As a rule, the operation was done about three weeks after cessation of the Curie therapy of the tongue, being carried out on one side of the neck and including the submaxillary lymph nodes and those along the sternocleidomastoid and internal jugular vein. This was followed by application of radium over the cervical region in all cases in which microscopic examination revealed the existence of cancerous changes in the excised nodes. This was true of sixty-nine of the eighty-three cases. Nineteen of the eighty-three in which there was secondary lymph node involvement were cured. Among the sixty-four in which the operation was a failure are included three postoperative deaths, four deaths from intercurrent disease during the first five years after treatment and four deaths from probable recurrences in which the seat of the latter could not be determined. In nineteen cases of lymph node recurrence the tongue remained cured. Ten of these nineteen recurrences were on the operated side, on the opposite side and three bilateral. In thirteen cases there was a recurrence of the cancer in the tongue but none in the cervical lymph nodes. In fifteen others recurrence took place in the tongue, mouth and neck

and in six there were distant metastases. The author emphasized the necessity of thorough removal of all lymph nodes even though the primary lesion in the tongue is minute. The operation should be performed as soon as possible after completion of the radium treatment of the tongue and should include both sides of the neck in all cases in which the primary lesion extends beyond the midline of the tongue. Radium treatment of the cervical lymph nodes is of no avail in curing a postoperative recurrence.

Search for Tubercle Bacilli in Broncho-pulmonary Suppuration

At the June 23 meeting of the Académie de médecine an example of how modern methods of search for tubercle bacilli have permitted the detection of the tuberculous character of pulmonary lesions when least suspected was presented by Professor Bezançon and Drs. Braun and Meyer. Tubercle bacilli were found in the expectoration of patients in whom the usual radiographic and clinical evidences of tuberculosis were present. The association of acid-resistant bacilli to the bacteria found in cases of abscess and gangrene has been known for some time. The use of the Loewenstein technique as modified by Saenz and Costil combined with the Petragram culture medium has enabled the authors to find tubercle bacilli far more frequently than ever before. In four cases of pulmonary abscess and in one case of bronchiectasis a routine search by cultures of the sputum revealed tubercle bacilli. Staining methods had been positive in only one of the five cases. A number of similar cases, observed by other internists here, were also cited. Couve, in a thesis published in 1933, showed that an active tuberculosis often appeared during the course of or following pulmonary suppurations. Lemierre is of the opinion that the bacilli in a latent often minute tuberculous lesion are set free as the result of the abscess formation. Only systematic search by the culture method will reveal the presence of tubercle bacilli when the principal disease has a different etiology. In the discussion, Sergeant believed that the explanation offered by Bezançon and his associates seemed the most plausible one, viz., that the bacilli in a latent tuberculous lesion were liberated by the suppurative process but that one must also consider the possibility that prolonged suppuration weakens the resistance to such an extent that a latent focus becomes active.

International Gastro-Enterologic Congress During the Paris Exposition

The International Gastro-Enterological Society has just arranged its second meeting. The first sessions will be held at Paris, September 13, 15 and 17, 1937, under the presidency of Prof. Pierre Duval of Paris. The questions to be discussed are (1) the early diagnosis of cancer of the stomach and (2) acute and chronic obstruction of the small intestine. The former will form the subject of papers by French and German internists. The French contributions embrace the surgical aspects, Professors Duval and Gosset, the clinical and enterologic aspects Professor Carnot, roentgenology, Dr. Guttman, gastroscopy, Dr. Moutier, gastroscopic photography, Dr. Gann, chemical diagnosis, Professor Labbe, pathologic histology, Dr. Bertrand, and operative diagnosis, Drs. Gatellier and Charrier.

Professor Konjetzny will present the report of German participants aided by Professor von Bergmann (medicine), Professor Buerger (chemical diagnosis), Professor Saverbruch (surgery), Professor Berg (roentgenology), Professor Henrici (gastroscopy and gastroscopic photography), and Professor Staemmler (pathologic histology).

The second sessions will be held at Vichy, Sept. 16-18, 1937, and the subject will be hepatic insufficiency. Many participants from foreign countries will take part in this meeting.

BERLIN

(From Our Regular Correspondent)

Aug 17, 1936

The Klein Reaction for the Diagnosis of Cancer

With the exception of the Freund-Kaminer reaction, no previously known serologic examination method for malignant tumors has been able to make any claim of specificity. As early as 1910 Freund and Kaminer were able to establish that the serum of noncancerous persons destroys cancer cells, whereas that of cancer patients has no such ability. They believed that cancerous persons offered a special protection for the carcinoma cells. A qualification applies, to be sure, as carcinoma serum is able to protect carcinoma cells but not sarcoma cells confronted with lysis. Waterman believes in the validity of these observations and in the predisposition to cancer also assumed by Freund and Kaminer, a tendency probably manifested by the disappearance of the carcinolytic substance.

G Klein too, in discussing the technic of serologic diagnosis, takes as his point of departure a disturbance in the ability of the organism to defend itself against cancer, and this defect may be termed equivalent to the creation of a predisposition to cancer. Klein improved the Freund-Kaminer cytolytic reaction as well with reference to the widening of its applicability (so that it is immaterial which type of malignant tumor is in question, carcinoma or sarcoma), as likewise with reference to the exact evaluation of the test in both positive and negative directions. Klein substituted for the cell suspension from human tumors used by Freund and Kaminer in carcinolysis a similar cell suspension from an adenocarcinoma in the mouse. Since the Freund-Kaminer reaction follows in a number of other diseases the same course as in cancer and likewise presents difficulties in the technic of its carrying out, it has been found insufficient for diagnostic needs and cannot be of practical significance. Klein was the first to effect a thoroughgoing improvement of the Freund-Kaminer reaction with regard to its specific character so that the correct percentages of cancer positive and cancer-negative tests could be increased to numbers far in excess of the results obtainable by any other reaction test. The reliability of the criteria and the technic were perfected by Klein in such a way that subjective factors were prevented from influencing the observation of the reaction.

Although the data accumulated to date have ripened into a high percentage of accurate results, the latter have, however, as yet no absolutely uniform character. To effect follow-up examination of the previous significant and promising observations, the national bureau of health entered into collaboration with the Cecilienhaus of Berlin-Charlottenberg, an institution that has under its surveillance an extremely large number of cancer patients. A Pickhan, E Haagen and W Imhäuser have recently reported this helpful undertaking in the *Reichsgesundheitsblatt*.

In the Klein reaction the exclusion of a group of disturbing factors is to be borne in mind, particularly those of an endogenic or exogenic nature, since they may exert a profound biologic influence on the entire organism as well as on the composition of the blood serum and consequently on the result of the reaction. The troublesome factors that do not permit an examination of the blood serum till they have been removed are (1) nonsterile withdrawal of blood, (2) withdrawal of blood when the patient is not fasting, (3) removal of blood within twenty four hours after narcosis, after the administration of narcotics, anesthetics, hypnotics an excessive amount of alcohol, insulin, thyroxine and sodium chloride infusion, after blood transfusion and so on, (4) withdrawal of blood within from six to eight days following cessation of bleeding in more severe cases of external or internal hemorrhage (5) withdrawal of blood during fever of above 38 C (100.4 F), (6) withdrawal of blood within fourteen days after illumination and within ten weeks after irradiation, and (7) cachexia.

The survey extended over a year and included more than 500 serums of cancer patients, also patients presenting other diseases and normal persons. Hematologic specimens were sent to Professor Klein for examination without notation of the clinical diagnosis, as "blind tests." Chronologically the examinations are divided into three sections, each of which was considered separately: section 1 from December 1934 to May 1935, section 2 from May 1935 to July 1935, and section 3 from July 1935 to February 1936.

Section 1 comprises 309 cases all told. In attempting a critical analysis of the material, eighteen cases (5.85 per cent) were eliminated from consideration a priori on the basis of Klein's list of disturbing factors. These modifying influences have to do with either incomplete fasting during the withdrawal of blood, cachexia, hemorrhages, operations or irradiation during the susceptible period. Accordingly, 291 cases remained to be evaluated. Because the degree of correspondence between the clinical determinations and the serologic diagnoses was not clear in seventy cases (22.6 per cent of the total), these cases were eliminated from consideration pending further investigation. Thus finally the number of cases actually analyzed was reduced to 221 (71.52 per cent). As serologically correct, 146 cases (that is, 66 per cent of 221 cases and 47.25 per cent of 309 cases) could be diagnosed, seventy-five cases (that is, 33.94 per cent of 221 cases and 24.26 per cent of 309 cases) could be diagnosed as serologically incorrect. Among the seventy cases temporarily set aside, one case, that of a clinically undefined pulmonary tumor, was considered as in a class by itself. In nineteen cases the first interpretation was later changed. With the inclusion of these sixty-nine clarified cases, 290 specimens of serum were used for the final evaluation. The serologic diagnoses corresponded with the clinical observations in 182 cases (62.76 per cent), in 108 cases (37.24 per cent) there was, on the other hand, a lack of agreement. This section showed the extraordinary importance of the various disturbing factors for the observations as a whole.

In section 2 a number of cases were grouped together on the basis of even more painstaking investigation. These cases were able to hold their own against any objective criteria with reference to the proper preparation of the patients, exclusion of all modifying influences and the employment of the correct technic for withdrawal of the blood (the last named of especial importance for the final result). Of the fifty-eight cases in this group, fifteen had by reason of disturbing influences to remain without consideration in the evaluation. Three other specimens were set aside pending further clinical determinations. Thus there remained forty cases. Of these, thirty were evaluated as correct-positive, six as correct-negative and four as incorrect-negative. This means a result of 90 per cent accurate evaluations (if one is to reckon these small figures in percental terms).

In section 3 there were examined serums from patients presenting malignant tumors, eighty-two cases, serums of persons not presenting tumors, sixty-seven cases, total, 149 cases.

Of the serums of eighty-two tumor patients, seventy-nine yielded a correct-positive serologic reaction, three cases an incorrect reaction. Of the cancer cases, 96.3 per cent were accordingly correctly evaluated. Of the serums of sixty-seven persons not presenting malignant tumors, sixty-four exhibited a correct-positive serologic reaction and three an incorrect-positive reaction. Accordingly 95.5 per cent of the cancer-free serums were correctly diagnosed. Four cases as not free from modifying influences and six cases pending further investigation had to be set aside. The final figures for section 3 with the foregoing ten cases deducted is as follows: serums of patients presenting malignant tumors, seventy-six cases, serums of patients not presenting tumors, sixty-three cases, total, 139 cases.

Of the seventy-six tumor serums, seventy-four reacted correct-positive and two incorrect-negative. Accordingly, 97.4 per cent of the malignant tumors were correctly diagnosed from the serum.

Of the sixty-three serums of persons not presenting tumors, sixty-two showed correct-negative and one incorrect-positive reactions. Of the cancer-free specimens, 98.4 per cent were correctly evaluated. The mean of accurate diagnosis of the serums of both cancer patients and cancer-free persons amounted thus to 97.8 per cent.

These gratifying results in section 3 could have been obtained only through the strictest observance of directions and exclusion of all unduly influenced cases. This survey had at its disposal a larger selection of case material than could have ordinarily been obtained in practice. On the other hand, a considerable amount of fluctuation, particularly toward the unfavorable side, must be reckoned with and this is due to the greater incidence of the disturbing influences outlined. This is probably all the more frequently the case when the serums are assembled by persons lacking an absolutely uniform point of view.

The Klein cancer reaction is thus able, as Pickhan and his collaborators conclude, to function as Klein himself had claimed it would, with reference to both positive and negative evaluation or, in other words, for the determination of the presence or absence of cancer. However, the restricted selection of cases and the precautionary measures instituted with regard to the withdrawal of blood had to be most rigorously observed. These prerequisites are, however, extremely far reaching and greatly restrict the practical applicability of the method, the more so since the withdrawal of blood can take place only at the hospital. Withdrawal of the blood specimen by a practicing physician must therefore as a rule be rejected.

To what extent the Klein cancer reaction can succeed in being of general significance in the practice of medicine can be determined only after a further extensive collection of data, since in the foregoing material all diagnoses of cancer and other conditions had already been determined either clinically, histologically or roentgenologically. No single cases had therefore been detected by serologic reaction alone. Then too, it has yet to be determined whether the Klein reaction can provide an early diagnosis and whether it can be used as an indication of cure subsequent to operative or radiation therapy.

A recent issue of the *Münchener medizinische Wochenschrift* contains an account of various clinical investigations with this Klein cancer reaction. The Würzburg Surgical Clinic has made a two year study (under Dr. Reimers) of this procedure and carefully prepared no less than 691 blood specimens. As the controls showed, the reaction here too presented the same percental numbers of correct results. The "blind test" procedure being followed. A number of specimens were eliminated because of the impossibility of carrying on the clinical observation over a sufficiently extended time, several cases were also obscure. Of the remaining 628 cases, 181 by reason of the modifying factors could not be statistically evaluated. In the end there actually remained 438 cases incontestably established both clinically and histologically. Of the cases in this group correct diagnoses were made in 411 instances by the Klein test. The proportion of accurate results amounted on the average to 93.7 per cent.

Above 84 per cent of malignant tumor cases were correctly diagnosed. Among these, six cases of recurrence after radical operation were accurately recognized whereas of twenty-two carcinoma cases not previously treated only nineteen, that is, 86.5 per cent, exhibited correct positive reactions. The sarcoma cases presented less favorable results of twenty-eight cases (that is 92.9 per cent) of benign tumors twenty-six were correctly detected as negative. Likewise virtually all other types of tumors, struma or hypertrophy of the prostate, for

example, showed correct-negative reactions. It was concluded from these results that by the Klein test it is possible to differentiate malignant and benign tumors with a greater certainty.

In the Second Medical Clinic of the German University at Prague, as reported by Dr. Gröger, the test was performed on ninety patients in whom the presence of malignant neoplasms was regarded as a possibility. After elimination of all influenced cases, sixty-eight cases remained as material for evaluation. In 92.6 per cent of these cases the reaction found was proved by the further clinical course to have been correct. This corresponds favorably with the results obtained at the other clinics. Finally the Surgical Clinic of Munich had undertaken a more protracted investigation, which Dr. Hepp discusses. Some 700 blood specimens in all were sent in to Professor Klein and some 200 of these were submitted "blind" namely, without any information as to the nature of the sickness or the case history. Specimens to which intentionally falsified information was appended were also submitted. The result showed that an average accuracy of 90 per cent could still be maintained. The open group (that is, the serum specimens that were accompanied by data) yielded 93.4 per cent correct diagnoses, the "blind" group 90.2 per cent. Both carcinoma and sarcoma cases reacted positively. Differentiation of benign and malignant tumors succeeded in a large majority of cases. It was especially noteworthy that hypertrophy of the prostate could be distinguished from carcinoma of the same organ in a high percentage of instances. All things considered, the Klein reaction seems to represent a forward step, any definite estimate of its worth must await further research and discussion.

Early Arising from Bed After Operations

The question of the best time for a patient to quit his bed in the postoperative period has been to the fore. In 1935 Paschoud of Lausanne in particular established a definite "earliest time." Professor Flörcken, surgeon, of Frankfurt has meanwhile undertaken large scale observations of the same subject. Excepting in special cases of infection, of heart disease or of exophthalmic goiter, Flörcken had all his patients who had undergone operations out of their beds on the day of the intervention or, at most, from one to two days after ward. The patients were permitted to sit in easy chairs or to go about in the room. If increased temperatures unrelated to bronchitis were exhibited, the getting up was for the time being postponed. A principal presupposition for early quitting of bed is that the operation shall have run a smooth course. A protective dressing of elastic material should be applied after abdominal and hernial operations and a plaster-of-paris dressing, according to the Böhler method, following intervention in the soft parts. These appliances must be placed in such a way that they do not inhibit ambulation.

The results of 219 abdominal and hernial operations performed on patients above the age of 30 (under diverse types of anesthesia and narcosis) were as follows. Of five fatal cases advanced carcinoma was present in four, of three patients who died of embolism, two presented inoperable carcinoma. One patient died of pulmonary embolism sixteen days after an operation for severe appendicitis with peritonitis. Indeed this patient presented particularly complicated pathogenic conditions and had already previously been afflicted with an embolus. Cancer patients, especially if bedfast prior to the operation, were not permitted to leave their beds very early thereafter. The rest of the patients recovered completely without complications. postoperative pneumonia was not observed in a single instance.

Early postoperative arising offers according to Flörcken's investigations a whole series of benefits. The procedure dispels the feeling of illness in a remarkably short time, the functions of the bladder and of the intestine that otherwise frequently

require artificial assistance are for the most part spontaneously reestablished. At the same time the hospital staff is spared additional burdens. Especially remarkable was the rapid recovery and uneventful convalescence of three patients who had undergone operations for severe scar hernias. Early postoperative arising means earlier discharge from the hospital and subsequent resumption of normal activity.

The Death of Professor Vulpius

Oscar Vulpius, emeritus professor of orthopedics at Heidelberg, was killed in an automobile accident at the age of 69. Vulpius was known as one of the founders of the modern German orthopedic school. Particularly noteworthy among his many valuable contributions to orthopedic surgery were the operative methods devised by him for the surgery of the tendons and joints and for tendon implantations. In addition to his published work on orthopedic therapy, Vulpius made numerous useful contributions to the literatures of the care of the deformed and of the treatment of poliomyelitis. His teachings on the technics of orthopedic surgery have likewise exercised a widespread influence.

Marriages

HENRY FRANKLIN GLENN JR., Gastonia, N. C., to Miss Mary Jean Smith of Sylacauga, Ala., in Montreat, recently.

ROBERT JAMES McCLURE to Miss Phyllis H. Gratton, both of New Haven, Conn., at Charlevoix, Mich., August 19.

SOLOMON B. MEYERSON, St. Charles, Ill., to Miss Ida Edith Fisher of Long Branch, N. J., in Chicago, August 2.

ELIAS SMITH FREY, Louisville, Ky., to Miss Eloise Brown of Concord, Ga., in Atlanta, Ga., September 16.

LOUIS AUGUSTINE GIULIANO, South Norwalk, Conn., to Miss Mary Frances Dono of Brooklyn, August 2.

DONALD L. BORGES, Gowrie, Iowa, to Miss Helen B. Guenther of Sandusky, Ohio, September 20.

ROBERT SALINGER to DR. WINIFRED S. HULL, both of New Haven, Conn., in Brewster, N. Y., July 23.

EARL LEWIS CLAY, Oxford, N. C., to Miss Nell Smith Armistead of Nathalie, Va., September 9.

HENRY C. ROSENSTIEL, Freeport, Ill., to Miss Mildred Mershon of Mount Carroll, August 15.

BENJAMIN ANDERSON STRICKLAND JR., to Miss Lue Anne Massie, both of Baltimore, July 18.

WILLIAM H. M. ERB, Sassamansville, Pa., to Miss Sara Anne Smith of Hazleton, July 6.

JOHN M. WHITNEY, Jennings, La., to Miss Georgiana Rita Burst in New Orleans, August 1.

SALVATORE MEGNA, Milwaukee, to Miss Glendora Christensen of Two Rivers, Wis., July 15.

JOSEPH D. GATTI to Miss Mary B. Barteluce, both of Hackensack, N. J., August 1.

KENNETH EUGENE POWELL to Miss Doris Elizabeth Appell, both of Galva, Ill., October 3.

WILLIAM HENRY LACEY, Charleston, S. C., to Miss Dick Dennis of Pinopolis, July 26.

RICHARD PETER NEARY to Miss Winifred Rita O'Reilly, both of Minneapolis, September 5.

HAROLD E. HAYMOND Perry, Iowa, to Miss Isabel Crawford of Minburn, September 16.

ARTHUR BRUCE GILL to Miss Mabel Halsey Woodrow, both of Philadelphia, August 3.

KINLOCH NELSON to Miss Alice Magill Deford, both of Richmond, Va., July 23.

JAMES BLISH McBEAN to Miss Grace Agnes Callan, both of Chicago, August 19.

EDWARD W. MENCHER to Miss Nadine Greenman, both of New York, August 9.

RICHARD B. NELSON to Miss Vera Prior, both of Hammond, Ind., July 25.

WILLIAM O. OTT, Fort Worth, Texas, to Miss Merle Gaither, July 17.

Deaths

Howard Lombard Beye ☉ Iowa City, Iowa. Rush Medical College, Chicago, 1911. Since 1927 head of the department of surgery and since 1924 professor at the State University of Iowa College of Medicine, associate professor from 1920 to 1924, assistant professor from 1917 to 1920 and instructor in surgery from 1914 to 1917, in 1913 assistant in medicine at his alma mater, served during the World War, member of the American Surgical Association, the Western Surgical Association and the American Association for Thoracic Surgery, fellow of the American College of Surgeons, attending surgeon to the University Hospitals, aged 50, was killed, September 29, in an automobile accident.

Arthur Van Harlingen, Bryn Mawr, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1867, chief of skin clinic at his alma mater, from 1871 to 1883, professor of dermatology from 1883 to 1895 and emeritus professor from 1895 to 1912 at the Philadelphia Polyclinic, formerly clinical lecturer at the Jefferson Medical College, Philadelphia, past president of the American Dermatological Association, for many years on the staff of the Children's Hospital, author of "Handbook of the Diagnosis and Treatment of Skin Disease," in 1884, which was published in four editions, aged 90, died, September 23.

William Duffield ☉ Los Angeles, University of Pennsylvania Department of Medicine, Philadelphia, 1893, member of the House of Delegates of the American Medical Association in 1932, at one time vice president, and councilor of the Second District, California Medical Association, past president of the Los Angeles County Medical Society, past president and secretary of the Southern California Medical Association, past president, vice president and trustee of the Barlow Medical Library, member of the staffs of the Clara Barton Hospital and the California Lutheran Hospital, aged 69, died suddenly, September 9.

Edward Jonathan Klopp ☉ Philadelphia. Jefferson Medical College of Philadelphia, 1906, also a pharmacist, professor of surgery at his alma mater, member of the Western Surgical Association, fellow of the American College of Surgeons, member of the medical advisory board of Philadelphia, during the World War, and until 1930 a member of the U. S. Naval Reserve Force, aged 56, consulting surgeon to the Girard College, attending surgeon to the Delaware County, Pennsylvania and Memorial hospitals and the Jefferson Hospital, where he died, September 19, as the result of subacute bacterial endocarditis.

Arthur Parker Butt Sr ☉ Elkins, W. Va., College of Physicians and Surgeons, Baltimore, 1895, past president and secretary of the West Virginia State Medical Association, past president and secretary of the Barbour-Randolph-Tucker Counties Medical Society, fellow of the American College of Surgeons, medical superintendent and owner of the Elkins City Hospital, aged 65, died, August 5, of coronary thrombosis.

Manfred Call ☉ Richmond, Va., Medical College of Virginia, Richmond, 1899, professor of clinical medicine and formerly dean at his alma mater, member of the medical staff, Stuart Circle Hospital, one of the founders of the Children's Memorial Clinic, member of the staff, outpatient service, Memorial Hospital, aged 59, died September 13, in the Johns Hopkins Hospital, Baltimore, of bronchiogenic carcinoma.

Charles Arthur Zeigler, Amboy, Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, member of the Illinois State Medical Society, president of the Lee County Tuberculosis Society, for many years a member of the board of education, aged 68, died July 6 of occlusion of the coronary artery.

Juan L. Payawall, Ramsey, N. J., University of Maryland School of Medicine, Baltimore, 1917, member of the Medical Society of New Jersey, served during the World War, formerly member of the board of health, aged 41, died, July 27, in St. Joseph's Hospital, Paterson, of acute appendicitis, general peritonitis and postoperative hemorrhage.

Elisha Hall Gregory Wilson ☉ Cape Girardeau, Mo., Washington University School of Medicine, 1905, past president and secretary of the Cape Girardeau County Medical Society, served during the World War, on the staff of St. Francis Hospital, aged 56, died, July 12, in the Missouri Baptist Hospital, St. Louis.

Benjamin Edward Twitchell Jr ♂ Assistant Surgeon Lieutenant (j g) U S Navy, Parris Island, S C., University of Illinois College of Medicine, Chicago, 1931, entered the navy in 1930, aged 32, died, July 25, in the Naval Hospital, of fracture of the cervical vertebrae caused by diving into a shallow swimming pool

Edward Milton Brown ♂ Chicago, Northwestern University Medical School, Chicago, 1893, clinical professor of surgery, Loyola University School of Medicine, fellow of the American College of Surgeons, senior surgeon to the Mercy Hospital, aged 67, died, September 28, of coronary embolism and chronic myocarditis

Louis Dwight Robertson, Malone, Texas, University of Arkansas School of Medicine, Little Rock, 1912, member of the State Medical Association of Texas past president of the Hill County Medical Society, aged 67 died, July 10, of hydronephrosis of the left kidney, aneurysm of the ascending aorta and cystitis

S M Shankle, Hollandale, Miss (licensed in Mississippi in 1882), member of the Mississippi State Medical Association, mayor of Hollandale, formerly member of the state legislature, aged 74, died, July 9, in the King's Daughters' Hospital, Greenville, following an operation for a ruptured appendix

Oscar Paul Schnetzky, Princeton, Wis., Milwaukee Medical College, 1903, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, served during the World War, aged 57, died, July 28, in St. Agnes Hospital, Fond du Lac, of carcinoma of the pancreas.

Daniel Capron Norton, Manchester, N H., Dartmouth Medical School, Hanover, 1907, member of the New Hampshire Medical Society and the New England Otological and Laryngological Society, on the staffs of the Elliot and Balch hospitals, aged 55, died, July 14, of cerebral hemorrhage.

Erik Theophile Sandberg, Cardinal, Va., University of the South Medical Department, Sewanee, Tenn., 1899, member of the Medical Society of Virginia, served during the World War, aged 62, died, July 10, in the Elizabeth Buxton Hospital, Newport News, of intestinal obstruction

Lois Whitford Torres ♂ Mount Pleasant, Mich. University of Michigan Medical School Ann Arbor, 1929, school physician at the State Central Teachers' College aged 44, died July 25, in Panama City Fla., of a lesion of the spinal column involving the central nervous system

Daniel Erwin James, Holly Springs, Ark. College of Physicians and Surgeons, Dallas, Texas, 1908, Georgia College of Eclectic Medicine and Surgery Atlanta 1910 at one time member of the state legislature of Louisiana, aged 69, died, July 30, in a hospital at Shreveport, La

Albertus B Poppen, Muskegon, Mich. Rush Medical College, Chicago, 1909, member of the Michigan State Medical Society, fellow of the American College of Surgeons, aged 55 head of the gynecologic department of the Hackley Hospital, where he died, July 10, of heart disease

Cameron Carpenter Tallman, Fairfield Iowa Rush Medical College, Chicago, 1900, member of the Iowa State Medical Society, formerly county coroner on the staff of the Jefferson County Hospital aged 61, died August 1, in Fresno, Calif. of arteriosclerosis and hypertension

William Edward McClanahan, Baltimore University of Maryland School of Medicine, Baltimore 1902, for many years a member of the city health department served during the World War, aged 57, died July 23, in the U S Marine Hospital of chronic myocarditis

Charles A Evans, Bluffs Ill. Medical College of Indiana Indianapolis, 1896 past president of the Scott County Medical Society, past president of the village board and member of the local board of education aged 67, died July 5 of myocarditis and diabetes mellitus

Alfred Olin Ellison, Chicago Hering Medical College Chicago 1911 member of the Illinois State Medical Society served during the World War on the staff of the Norwegian American Hospital aged 49 died July 29, of an overdose of morphine, self administered

John Fremont Leavitt, Collingswood N J University of the City of New York Medical Department, 1882 member of the Medical Society of New Jersey for many years health officer of Camden aged 77 died July 22, of arteriosclerosis myocarditis and nephritis

Raymond Henry Stenger, Marion Ind. Indiana Medical College School of Medicine of Purdue University Indianapolis,

1907, served during the World War, formerly on the staff of the Veterans Administration Facility, aged 53, died July 8 of coronary thrombosis

Frank Aldis Torrey ♂ Lake City, Mich., Northwestern University Medical School, Chicago, 1932, also a pharmacist mayor of Lake City and county coroner, on the staff of the Mercy Hospital, Cadillac, aged 54, died suddenly, July 11, of coronary occlusion

James Raymond Cahill ♂ Otisville, N Y., University and Bellevue Hospital Medical College, New York, 1916, at various times health officer of the town of Mount Hope and the village of Otisville, aged 42, died, July 8, of splenic infarction and myocarditis

Lavord L Lee, San Antonio, Texas, Birmingham (Ala) Medical College, 1902 member of the State Medical Association of Texas and councilor of the Fifth District, member of the city board of health, aged 58, died, July 4, of an accidental gunshot wound.

William Fletcher Walling, Binghamton N Y., Long Island College Hospital, Brooklyn, 1903, member of the Medical Society of the State of New York aged 66, died July 11 at his summer home in Heart Lake, of coronary occlusion and arteriosclerosis

Manning Alonzo Rountree, Reidsville, Ga., University of Georgia Medical Department, Augusta, 1892, member of the Medical Association of Georgia, formerly mayor of Adrian, and state senator, aged 69, died, July 21, in a hospital at Savannah

Horace Phillips, Philadelphia University of Pennsylvania Department of Medicine, Philadelphia, 1889, served during the World War, member of the Department of Mental Diseases Pennsylvania Hospital, from 1894 to 1913, aged 69, died, July 23

Henry Miller Goodman, Louisville, Ky., University of Louisville Medical Department, 1883, member of the Kentucky State Medical Association, formerly professor of chemistry and toxicology at his alma mater, aged 74, died, July 11

Rees Philpott, Middleport Ohio, Western Reserve University School of Medicine, Cleveland, 1920, member of the Ohio State Medical Association, aged 44 died, July 1, in St. Joseph's Hospital, Parkersburg, W Va., of cerebral hemorrhage

Everett F Long ♂ High Point, N C., Medical College of Virginia, Richmond, 1909, at one time health officer of Wake and Davidson counties, for many years on the staff of the Burrus Memorial Hospital, aged 58, died, July 5

Henry Ford Haskins, Peoria, Ill., St. Louis University School of Medicine, 1916, member of the Associated Anesthetists of the United States and Canada, served during the World War, aged 43, died, July 25, of pneumonia

Louise Marie Gerber-Dietmeier, Jasper Minn. University of Minnesota Medical School Minneapolis, 1893 member of the Minnesota State Medical Association aged 67, died July 2 in a hospital at St. Peter, of pneumonia

Jefferson Newton Hoyt, San Antonio Texas Keokuk (Iowa) Medical College, College of Physicians and Surgeons 1904, served during the World War aged 60, died July 23 in Des Moines, of chronic myocarditis

Leroy Thomas Telford, Alma, Ill. University of Illinois College of Medicine, Chicago, 1936, aged 26 died, July 12 in the Evangelical Deaconess Hospital, St. Louis of an injury received by diving into shallow water

Charles Andrew Tignor, Washington, D C., Howard University College of Medicine Washington, 1901, a medical inspector in public schools aged 60, died, July 12 of prostatic obstruction infection and hemorrhage

Frank Scott Glover, Houston, Texas Atlanta College of Physicians and Surgeons 1910, member of the State Medical Association of Texas served during the World War, aged 49 died July 25 of coronary thrombosis

Lineus Wayne Fishel, York, Pa. Jefferson Medical College of Philadelphia 1920, member of the Medical Society of the State of Pennsylvania aged 40 died suddenly, July 20 of acute dilatation of the heart

John Knox, Davenport Iowa University of Pennsylvania Department of Medicine Philadelphia 1877 formerly mayor school director and health officer of Princeton, aged 83 died July 14 of chronic myocarditis

George J Rivard Sr., Assumption Ill. Chicago Medical College 1881 member of the Illinois State Medical Society aged 76 died July 8 in St. Mary's Hospital Decatur of acute pancreatitis and uremia.

John Edgar Hubble, Pomona, Calif., University of Virginia Department of Medicine, Charlottesville, 1891, member of the California Medical Association, aged 72, died, July 30, of coronary thrombosis

John Edwin Dougherty, Elkins, W. Va., Medical College of Virginia, Richmond, 1924, member of the West Virginia State Medical Association, aged 38, died suddenly, July 16, of coronary thrombosis

Maximilian Allen Richter, Buffalo, University of Buffalo School of Medicine, 1907, member of the Medical Society of the State of New York, aged 76, died, July 28, of cardiovascular renal disease

James Levi Lee, Auburndale, Fla., Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1882, aged 80, died, July 27, of uremia and chronic nephritis

Joseph Emmor Pears, Decoto, Calif., Kansas City (Mo.) Medical College, 1902, at one time health commissioner of Pueblo, Colo., aged 73, died, June 23, of cerebral hemorrhage and arteriosclerosis

Merritt Matthew Gibson, El Paso, Texas, Ohio State University College of Medicine, Columbus, 1929, aged 34, died, July 8, in the Masonic Hospital, of myocarditis and pulmonary tuberculosis

George Joseph Roy, Brunswick, Maine, Laval University Faculty of Medicine, Quebec, Canada, 1891, aged 73, died, July 1, of arteriosclerosis, cerebral hemorrhage and bronchopneumonia

Dalton Yancy Rosborough, Palatka, Fla., Medical College of the State of South Carolina, Charleston, 1919, aged 46, died, July 3, in St. Luke's Hospital, Jacksonville, of angina pectoris

Sebastian B. Du Bose, Bishopville, S. C., University of Nashville (Tenn.) Medical Department, 1901, aged 59, died, July 10, in the McLeod Infirmary, Florence, of hemorrhagic colitis

Henry M. Strickland, Live Oak, Fla., Hospital Medical College, Atlanta, 1910, member of the Florida Medical Association, aged 48, died suddenly in July, at his camp on Blue Lake.

Lawrence Daniel Roche, New York, Fordham University School of Medicine, New York, 1913, member of the Medical Society of the State of New York, aged 47, died, June 27

Gratten Almer Ehret, Cleveland, Western Reserve University Medical Department, Cleveland, 1890, past president of the board of education of East Cleveland, aged 69, died, July 30

Lewis Daniel Hammond, Irvins Store, Ky., University of Louisville (Ky.) Medical Department, 1895, member of the Kentucky State Medical Association, aged 66, died, July 11

Robert John Lawlor, Cleveland, Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1901, aged 64, died, July 14, of coronary sclerosis

Fred Bryce Jewett, Melrose, Mass., Harvard University Medical School, Boston, 1892, medical superintendent of the Reeves Sanatorium, Melrose Highlands, aged 69, died, July 26

William Edward Redford, Plainview, Texas, Louisville (Ky.) Medical College, 1893, member of the State Medical Association of Texas, aged 70, died, July 18, of pneumonia

Harold Earl Dodge, Franklin Park, Ill., Rush Medical College, Chicago, 1890, for many years health officer of Franklin Park, aged 73, died, July 13, of carcinoma of the prostate.

David Alfred Baker, Glendale, Calif., Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1907, aged 54, died, July 19, at Sawtelle, of hypertensive heart disease.

Louis Oscar Lesieur, Biddeford, Maine, Albany (N. Y.) Medical College, 1895, at one time member of the board of health of Rumford, city physician, aged 67, died, July 26

Jesse Thomas Nugent, Virgil, Kan., Washington University School of Medicine, St. Louis, 1909, aged 52, died, July 6, of cholecystitis with gangrene of the gallbladder

John Walter Telford, Margaretville, N. Y., New York Homeopathic Medical College, 1886, at one time postmaster of Margaretville, aged 72, died, July 21, in New York.

George Nelson Manning, Wheaton, Ill., College of Physicians and Surgeons of Chicago, 1894, aged 66, died, July 13, in St. Charles Hospital, Aurora, of cerebral hemorrhage.

Joel Henry Greene, Urbana, Ill., University of Buffalo School of Medicine, 1875, aged 84, died, July 29, in the Burnham City Hospital, Champaign, of angina pectoris

Silas Cicero Holloman, Caldwell, Texas, Memphis (Tenn.) Hospital Medical College, 1900, member of the State Medical Association of Texas, aged 55, died suddenly, July 2

Charles Valentine Pease, Tolland, Conn., Tufts College Medical School, Boston, 1904, aged 60, died, July 12, in Northampton, Mass., of hypertensive heart disease.

David J. Walter, St. Louis, St. Louis College of Physicians and Surgeons, 1906 and 1914, member of the Missouri State Medical Association, aged 62, died, June 21

Louis J. Giers, Jerseyville, Ill., St. Louis College of Physicians and Surgeons, 1891, member of the Illinois State Medical Society, aged 69, died, July 11, of arteriosclerosis

Winfield Scott Moon, Audubon, Iowa, Barnes Medical College, St. Louis, 1899, aged 60, died, July 16, in the Clarinda (Iowa) State Hospital, of cerebral arteriosclerosis

Frederick A. Mandeville, Summit, N. J., New York Homeopathic Medical College and Hospital, 1888, aged 73, died, July 15, of chronic myocarditis and nephritis

Lyman R. Palmer, New Rochelle, N. Y., Hahnemann Medical College and Hospital, Chicago, 1880, aged 78, died, July 11, of chronic nephritis and arteriosclerosis

Charles F. North, Beaver Dam, Wis., Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1884, aged 82, died, July 30, of senile dementia and arteriosclerosis

William Eugene Sloat, Denmark, Iowa, Long Island College Hospital, Brooklyn, 1873, Civil War veteran, aged 94, died, July 18, in Ottumwa, of arteriosclerosis

Henry Pilgrim Holt, Torrance, Pa., College of Physicians and Surgeons, Baltimore, 1886, aged 72, died, July 12, in the Torrance State Hospital, of lobar pneumonia

William A. Hays, Birmingham, Ala., Medical College of Alabama, Mobile, 1887, aged 77, died, July 16, in the Norwood Hospital, of carcinoma of the stomach

Francis E. Rohan, Joplin, Mo., Missouri Medical College, St. Louis, 1893, served during the World War, died, July 12, of coronary arteriosclerosis and cholecystitis

Setrac G. Eghian, New York, Medizinische Fakultät der Friedrich-Wilhelms-Universität, Berlin, Prussia, Germany, 1899, aged 60, died, July 30, of carcinoma

William J. Humphrey, Union City, Pa., University of Buffalo School of Medicine, 1890, also a pharmacist, aged 75, died, July 28, of cerebral arteriosclerosis

John Kemper Johnson, Boaz, Ala., University of Nashville (Tenn.) Medical Department, 1884, aged 74, died, in July, at Hot Springs National Park, Ark.

Julian Theodore William Kastendieck, Brooklyn, New York Homeopathic Medical College and Hospital, 1888, aged 71, died, July 7, of pernicious anemia

John L. Slaughter, Hot Springs National Park, Ark., Arkansas Industrial University Medical Department, Little Rock, 1889, aged 79, died, July 4

Irvine White Patton, Ajo, Ariz., University of Virginia Department of Medicine, Charlottesville, 1895, aged 64, died, July 1, of chronic myocarditis

Dudley B. Channell, Oakland, Calif., Willamette University Medical Department, Portland, Ore., 1894, aged 81, died, July 9, of coronary occlusion

Richard Gregory Rozier, Lumberton, N. C., University of Maryland School of Medicine, Baltimore, 1899, aged 67, died, July 1, of myocarditis

William Petty, Wilkes-Barre, Pa., Long Island College Hospital, Brooklyn, 1886, aged 75, died, July 5, of cerebral hemorrhage due to a fall

John Miles Gathright, Oxford, Miss., Memphis (Tenn.) Hospital Medical College, 1898, aged 64, died, July 17, of myocarditis and nephritis

John Franklin McCarty, Richmond, Mich., University of Maryland School of Medicine, Baltimore, 1896, aged 64, died, July 14, of heart disease

Douglas Caulkins, Knoxville, Tenn., Hahnemann Medical College and Hospital of Philadelphia, 1886, aged 78, died, July 15, of myocarditis

Augustus Stanfield, Orange, N. J., Howard University College of Medicine, Washington, D. C., 1912, aged 45, died, July 1, of nephritis

Edward Day, Covington, Ky., Cincinnati College of Medicine and Surgery, 1888, aged 80, died, July 12, of heart disease and chronic nephritis

Hilton Hammond, South Bend, Ind., Hahnemann Medical College and Hospital, Chicago, 1887, aged 76, died, July 28, of cerebral hemorrhage

Robert J. McCready, Pittsburgh, Bellevue Hospital Medical College, New York, 1873, aged 86, died, July 20, of cerebral embolism

Sandom Sidney Pace, Lee Park, Pa. (registered in Prothonotary's office in Luzerne County), aged 94, died, July 1, of arteriosclerosis

William Medill Bair, Des Moines, Iowa, Ensworth Medical College, St. Joseph, Mo., 1886, aged 80, died, July 5, of cerebral hemorrhage

Henry C. Simpson, Springfield, Ill., St. Louis Medical College, 1874, Civil War veteran, aged 92, died, July 13, of heat prostration

Arthur Alexander Rock, Milwaukee, Milwaukee Medical College, 1902, aged 60, died, July 17, of hypertensive cardiovascular disease

John Moore Delo, Philadelphia, Medico-Chirurgical College of Philadelphia, 1909, aged 61, died, July 15, of cardiac decompensation

Galen C. Paxton, Santa Monica, Calif., Louisville (Ky.) Medical College, 1883, aged 81, died, June 23, of coronary arteriosclerosis

Henry C. Fowler, El Dorado, Ark., Meharry Medical College, Nashville, Tenn., 1909, aged 55, died, July 25, of gastro-enteritis

Nimrod Edgar Underwood, Red Bay, Ala., Chattanooga (Tenn.) Medical College, 1900, aged 67, died, June 19, of septic arthritis

John Streeter Sidley, Los Angeles, Northwestern University Medical School, Chicago, 1906, aged 57, died, July 23, of pneumonia

Archibald C. Kennel, St. Louis, Missouri Medical College, St. Louis, 1887, aged 75, died, July 10, of cerebral hemorrhage

Joseph C. Hudspeth, Sandoval, Ill., American Medical College, St. Louis, 1882, aged 81, died, July 13, of heat exhaustion

Lester Dale Rickey, Columbus, Ohio, Ohio Medical University, Columbus, 1903, aged 59, was found dead, July 15, of myocarditis

John Llewellyn Hamilton, Leavenworth, Kan., Columbus Medical College, 1881, aged 81, died, July 13, of arteriosclerosis

Marion A. Young, Abbeville, La., University of the South Medical Department, Sewanee, Tenn., 1895, aged 62, died, June 4

Dee W. Kirby, Gurdon, Ark., Memphis (Tenn.) Hospital Medical College, 1904, aged 55, died, July 17, of heart block

John Paul Sullivan, Omaha, John A. Creighton Medical College, Omaha, 1916, aged 55, died, July 14, of sunstroke

James Henry Stokes, Erin, Tenn., Vanderbilt University School of Medicine, Nashville, 1881, aged 77, died, June 14

Burton J. Dodge, Alma, Neb., Keokuk (Iowa) Medical College, 1898, aged 59, died, July 8, of chronic nephritis

Vernon B. Cosby, Maplewood, Mo., Homeopathic Medical College of Missouri, St. Louis, 1883, aged 80, died, July 14

Joseph D. Cunningham, Fairfield, Mich. (licensed in Michigan in 1905), aged 84, died, July 12, of arteriosclerosis

Adolphus A. Hicks, Muldrow, Okla., Memphis (Tenn.) Hospital Medical College, 1899, aged 71, died, July 28

William F. Flack, Knoxville, Tenn., Knoxville Medical College, 1910, aged 51, died, July 8, of angina pectoris

John W. Dalton, Dalton, Ark., American Medical College, St. Louis, 1880, aged 80, died, July 24, of pneumonia

Thomas W. Harper, Ruston, La., Memphis (Tenn.) Hospital Medical College, 1892, aged 85, died, July 1

W. A. Briggs, Memphis, Tenn. (licensed in Tennessee in 1909), aged 75, died, July 28, in Knoxville

Daniel Hill Sneed, Normandy, Tenn. (licensed in Tennessee in 1910), aged 60, died, July 10

T. George Burge, Judsonia, Ark. (licensed in Arkansas in 1903), aged 63, died, June 19

Robert J. Ferguson, Carter, Tenn. (licensed in Tennessee in 1904), aged 70, died, July 11

Cornelia E. Brown, New York, Columbus Medical College, 1887, aged 73, died, in July

Bureau of Investigation

GLANRAY AND PROSTAL-RAY

Prostatic Gland Devices Declared Fraudulent and Debarred from the United States Mails

Glanray, Glanray Corp., Glanray Corporation, Samuel J. Wolf, and their officers and agents as such, at Los Angeles, Calif., were engaged, according to a statement of the Postmaster General, in conducting a scheme or device for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises. By the authority vested in him, the Postmaster General closed the mails on August 30 to the concerns.

The Glanray enterprise is operated as a California corporation and was chartered in June 1934 with a reported capitalization of \$25,000. The officers of the outfit consisted of S. J. Wolf, president, and Mrs. Sylvia B. Wolf, his wife, as vice president, secretary and treasurer. The business consists of promoting through the mails the sale of electrically heated, prong-like devices called "Glanray" and "Prostal-Ray" for so called "prostate gland trouble."

Contact with prospective customers was made by means of advertisements inserted in publications having a national circulation. A specimen of the "come-on" bait is reproduced.

PROSTATE GLAND Brings Results



Stop night rising, leg back pains, nervousness, low vitality. Treat yourself at home. First cost is last. FREE BOOK. GLANRAY CORP., DEPT. F, LOS ANGELES, CALIF.

Other advertisements, as quoted by the Post Office fraud order, contained such implied promises and statements as:

"The Glanray automatically heats and massages the Prostate, helping nature to restore the gland to health! Naturally, when the prostate is back to normal all the aches and pains caused by its inactivity disappear. Why suffer the misery of Prostate trouble when Glanray is guaranteed to help you or your money is returned? Many doctors concede that heat massage is the proper treatment for prostate trouble."

The generic term "prostate trouble" is particularly objectionable, because it implies that all abnormal conditions of the prostate are the same and, therefore, respond to one line of therapy, namely, the Glanray and Prostal-Ray.

The victim of real or imaginary symptoms referable to the male perineum who succumbed to the "we want to help you overcome your aches and pains" ballyhoo received, on remittance of \$12 the Glanray apparatus, a hard rubber, prong-like device four inches long, with a bulbous end some three-quarters of an inch thick and with a circular shield for regulating the depth of rectal insertion. Attachments consisted of an electrical cord with switch and sockets and a ten watt red bulb for use as a gauge. A special lubricant, composed of 71 per cent aspirin in a petrolatum base, completed the equipment. If the prospective purchaser failed to warm to the \$12 gadget, the company had a "simplified electrical device," that is, if you have \$4.85 in cash.

The unhappy sufferer from any one of the innumerable conditions causing genito urinary symptoms is led to believe from advertisements of the Glanray type that frequency of urination means only one condition—"prostatic trouble." The fact that frequency of urination is only a symptom of bladder irritation, which may be brought about by an encyclopedic list of conditions, either of psychogenic or organic origin is of course brought to the attention of the prospective Glanray purchaser.

Especially unwarranted in the Glanray copy was the fear appeal.

Are you face to face with an operation for Prostate Gland? Is the surgeon just around the corner? If you have the Prostate Gland out will that make you as good as ever? Operations do not always cure. Ask any doctor if he will guarantee it. Glanray offers you a knifeless drugless simple safe home treatment for Prostate Gland.

trouble. The entire cost of Glanray is only a mere fraction of the cost of a surgical operation. We are convinced that you can give yourself a better massage with Glanray than a doctor can give you.

The bewildered patient who succumbed to the Glanray copy, "Danger Signals for Men," was not told by the callous promoter that stone in the bladder, carcinoma of the prostate, carcinoma of the bladder wall, tuberculosis of the bladder, ureter or prostate, contraction of the bladder neck, stricture of the urethra, nerve degeneration associated with cerebrospinal syphilis, were but a few of the pathologic conditions that may cause so-called "bladder weakness, mental despondency, leg, foot and back pains, night rising, irritability" for which the Glanray device would be worthless.

The suggestion in the advertising that using the Glanray or Prostal Ray devices would enable one to "avoid doctors' bills" would be dangerous advice to a person in the pre-cancer stage. The victim could as reasonably hope to "avoid doctors' bills" by postponing the period for radium, x-ray or surgery until too late.

Particularly untruthful was the statement: "There is no biological reason why a man should not maintain his mental and physical vigor to the ripe old age of seventy years or even more," it being implied that the device exploited by Wolf would "restore you to your old-time vigorous manhood."

For all the Prostal-Ray and Glanray blatant advertising copy, no witness, either expert or lay, testified on behalf of the respondents at the hearing, according to the Post Office Solicitor's report of the case.

The exploitation by periodical advertisements of such devices as the Glanray and Prostal-Ray is another example of the heartlessness of the commercially-minded. The postal authorities are to be commended for closing the United States mails to such devices as the Glanray and Prostal Ray.

Correspondence

SERUM TREATMENT OF POLIOMYELITIS

To the Editor—We have read the editorial on the serum treatment in poliomyelitis in the issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of August 8 with a great deal of interest. With certain of the points made in the editorial we are inclined to take issue.

In the first place, reference is made to "the almost universal observation of rapid symptomatic response with a drop in temperature and improvement in symptoms even with the small doses of serum in vogue at that time." We have never been impressed with this. We have seen quite as marked improvement in symptoms following a lumbar puncture. Indeed, we have not infrequently observed an exacerbation of symptoms after serum was given intraspinally.

Attention may be called to a typographical error in the paragraph referring to Dr. Park's statement: The fatality rate in the untreated cases was 0.9 per cent, not 9 per cent.

The editorial quotes from the report by the New York Academy of Medicine: "The untreated group was indeed a much milder group than the treated group. The results of the study are therefore inconclusive." To the inferences implied by this statement, we take most decided exception. When a patient is seen in the preparalytic stage, no prognosis can be made with regard to the ultimate severity of the case. Patients with a meningeal type who recover with no evidence of paralysis often appear severely ill at the onset. On the other hand, not infrequently patients with a mild onset develop severe paralysis as the disease progresses. To quote from Kramer, Aycock et al., "In a disease so unpredictable as poliomyelitis, where there is no single symptom or physical finding in the preparalytic stage to indicate the outcome, nothing short of an experiment with alternate series of cases would serve to establish the efficacy of convalescent serum." We are therefore unable to understand on what ground the workers

in the Academy of Medicine group could have decided that the untreated cases were milder.

If we understand the conclusions of Kramer and Aycock correctly, their unwillingness to draw conclusions as to the efficacy of the serum was based on the relatively small number of patients studied by them. It seems to us that this objection has been overcome when the total number of cases reported in the study of 1931 is considered. This series comprised in all a total of more than 1,100 cases, nearly equally divided, and observed by three different groups of workers, namely, the Health Department of New York City, the Academy of Medicine and Kramer and Aycock. It seems to us that this number of cases is sufficiently large to warrant the drawing of a quite definite conclusion that the convalescent serum is of no value in the treatment of poliomyelitis.

It is to be noted that in the three recent favorable reports cited in the editorial by Jensen, Cowie and Levinson, there were no controls. This leaves their work in the same questionable position as the favorable reports published before 1931.

As regards the method of administration and the dosage, attention must be called to the fact that the reports have been equally favorable regardless of these two factors. For instance, in the eastern part of the United States and in Australia, large doses intraspinally and intravenously were used, in California large doses intramuscularly, in Canada, small doses—from 20 to 25 cc—intramuscularly. The results were always favorable.

Certainly, in view of these facts, those who are still unconvinced and who wish to continue the use of the serum should use it in alternate cases, and draw conclusions only from fairly large series.

WILLIAM H. PARK, M.D.
JOSEPHINE B. NEAL, M.D.
New York

GARLIC ODOR TO BREATH

To the Editor—Since you have published correspondence from Dr. Haggard (THE JOURNAL, September 12, p. 895) in which he criticizes the work of C. E. Richards and myself (THE JOURNAL, August 8, p. 409) in such a way as to leave the question of garlic breath odor in doubt, I wish you would publish this additional correspondence.

We have reread Dr. Haggard's report (THE JOURNAL, June 15, 1935, p. 2160) and his quotations from his work, and we believe that the conclusion at which he arrived from his experiments should be the same as he published, namely, that onion or garlic breath odors "arise solely from particles of onion or garlic retained in the structure about the mouth." If we appeared to be "anxious to throw discredit" on his work, it must be because of our understanding of the word "solely" as he used it. We disagree about his use of that word and we also disagree about his use of the word "wholly" in his recent correspondence. He ascribed to us a belief that breath odor comes wholly from the lungs. We made no such sweeping conclusion and we implied nothing more than was shown in our experiments, namely, that garlic breath odors do come from the lungs and that in the subjects used in our experiments these odors came only from the lungs. This we proved and Dr. Haggard, in his recent correspondence, conceded it in regard to garlic oil. Whether or not that concession is consistent with Dr. Haggard's use of the word "solely," I cannot tell from his writings. We have no doubt that when particles of garlic or onion are retained in the mouth, they give forth an odor.

Dr. Haggard criticized us for relying on the sense of smell rather than on chemical methods such as he used. Since the discussion concerns itself with garlic and onion odors, it would seem that the actual detection of these characteristic odors by the sense of smell is preferable to Dr. Haggard's chemical tests, which he admits are nonspecific. In his paper he not only admits that garlic odors are easily detectable at as low a

theoretical concentration of the oil in the breath as 0.00015 mg per liter (the lowest recorded by him) but further advocates our method by making his "crucial" experiment by the detection of odor alone. In his recent correspondence, Dr Haggard did not defend his chemical methods. On the contrary, he suggested that we do more experiments by the smell method. This, I take, is a concession that our experiments were not fundamentally bad because of the smell technique.

There remains, then, but one important point—that is, to convince Dr Haggard and your readers that our feeding experiments were done with garlic and onion in amounts, as he says, "within reason" (quantity not stated). Let us, then, give this additional information. The food (soup and salads) was prepared by hospital dietitians in hospital kitchens, with one exception. In experiment 2 the subject with complete tracheal fistula went to a restaurant and ate "mixed vegetable salad including Bermunda onion and garlic." This salad was prepared by the proprietor. The subject came thence to our laboratory and said he relished his food—meanwhile blowing off garlic fumes from his tracheal fistula. This we feel is an amount "within reason" and so concludes the matter. We believe, as does Dr Haggard, that when facts are clearly stated the matters of discredit and interpretation take care of themselves.

M A BLANKENHORN, M D, Cincinnati

INQUIRY ON THE "SAFE PERIOD," BY THE NATIONAL COMMITTEE ON MATERNAL HEALTH

To the Editor—In line with our interest in "medical aspects of human fertility," we are impressed by the extensive and increasing interest in and reliance upon the so-called "safe period" as a means of contraception. There is urgent need for determining, as accurately as possible, whether there exists, for the regularly menstruating woman, a predictable and reliable moiety of her cycle in which fertilization is impossible. The National Committee on Maternal Health is undertaking to collect pertinent data which, by reason of their source, will be of exceptional value.

We seek to enlist specially qualified married couples who will scrupulously keep and transmit to us—confidentially, of course—accurate and complete records of menstruation and coitus over a long period of time, several years if possible. We suggest, though not exclusively, couples of whom one or both are, say, physicians or graduate students or faculty members or research workers in biologic or other scientific departments, therefore competent to furnish trustworthy records and also scientifically interested in contributing to this investigation.

A couple such as we wish to enlist would prefer not to have a pregnancy develop during the next year or more, although if one did develop it would not be calamitous. Accordingly, the couple would observe the so-called "safe periods" as their sole means of avoiding conception. If that succeeds, and then the time comes when they desire a child, they would reverse their practice confining coitus to occasions outside the "safe period" or they would at least restrict intercourse to the moieties of the menstrual cycle when, theoretically, pregnancy is most likely to result, and then record how soon it does result. Needless to say, there must be no known or probable factor of involuntary sterility in either one of the couple.

The frankly experimental character of the coital practices on which these records are based and the special qualifications of the recorders, will make these data uniquely valuable.

The committee is peculiarly fitted to collect these records. Its territory is large enough to encompass couples in number adequate for the investigation—couples who, by reason of their particular qualifications and their willingness to volunteer, must be few in any one community, no matter how large the latter may be.

On application, we shall distribute to individuals simple records and brief instructions easy to follow. We hope to reach from as many as possible who are reached, directly or indirectly by this announcement. Please address National Committee on Maternal Health, Inc., New York Academy of Medicine Building, 2 East 103d Street New York, N Y.

RAYMOND SQUIER, M D, New York
Executive Secretary, National Committee
on Maternal Health

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY CONSULTING AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

TOXIC NEPHRITIS FOLLOWING USE OF PICRIC ACID NASAL SPRAY

To the Editor—Could the following cases be due to the picric acid alum spray described by Dr Charles Armstrong or just coincidental? Case 1. A white boy, aged 12 one of seventeen living children, died whose only illness since infancy was influenza about four years ago and a light case on September 7 when perfectly well was given a spray of picric acid alum solution. He became nauseated but did not vomit. September 9 his mother noticed a slight swelling of the face and after the second spray on that day there was considerable nausea and by afternoon a generalized edema. September 10 there was difficulty in voiding, vertigo and marked fatigue. I saw him in the office on the morning of the tenth. The temperature was 100 pulse 108 respirations 28. Anasarca was present. The throat was slightly red. There were a few moist rales in both bases. The urine voided in the office had a smoky albumen color, albumin was three plus. It contained many red blood cells and casts mostly granular. September 12 the urine was much improved and the edema was less marked. Case 2. A Negro boy aged 10 the second of six living children none dead was doctor treated for worms when 2 years old, and had never been sick since. September 7 he was sprayed and developed an intense pain in the epigastrium but did not vomit. On the 8th he felt fairly well but after spraying on the 9th the pain in the abdomen was much worse with nausea but no vomiting. September 11 he was too sick to go back for spraying and anasarca was present. When I saw him September 17 there was a temperature of 101 with pulse 92. There was generalized edema. The throat and the heart were normal. There were a few moist rales in both bases. The urine voided in the office was about the same as in case 1. September 20 he had convulsions lasting about one and one-half hours. September 21 there was slight improvement with the urine showing less albumin, fewer red blood cells and not so many casts. Blood slides on both of these children were normal. There were no sores and nothing was present in the history except the spray that could to my mind account for the nephritis.

L J RUTLEDGE M D McComb Miss.

ANSWER.—The two cases described should certainly be considered examples of toxic nephritis induced by the picric acid alum spray. The toxicity of picric acid or trinitrophenol, has been subjected to experimental and clinical study since 1827. Internal administration for febrile conditions was attempted by Braconnet in 1830 but soon was shown to be too dangerous. The chief risk of picric acid poisoning has been in industry and particularly in munition manufacture. During the war the French found trinitrophenol but slightly less toxic than dinitrophenol. The grave dangers of internal administration of dinitrophenol need no further emphasis here.

The systemic effects of trinitrophenol are gastro-enteric, hemorrhagic nephritis and acute hepatitis with hemolysis of the erythroplasts. Extensive absorption may cause yellow discoloration due to picric acid staining but the acute hepatitis also causes a true icterus. These two children thus presented quite classic evidences of picric acid poisoning. In the second case the recurrence of symptoms promptly following a second spraying with picric acid-alum solution is particularly convincing of the etiologic association. The transient nature of the nephritis, which appeared to tend toward healing speaks for a temporary poisoning rather than infection as the causative agent.

It is well known that the introduction of nitro groups into phenol compounds greatly increases their toxicity (Hammaker, Alice Industrial Poisons in the United States New York: Macmillan Company 1925). The susceptibility to renal damage

nitrite poisoning is much greater in children than in adults, instances of nitrite intoxication with methemoglobin formation are not unusual in small children from even small doses of nitrite-forming drugs. The greater vulnerability of children to nitrites may be a factor in making the nitrophenols, such as picric acid, relatively much more toxic to children than to adults. At least the probability of such additional danger suffices to warrant expressing an emphatic warning as to the dangers of possible picric acid absorption. Certainly it is not justified to advocate a method of prophylaxis of somewhat uncertain efficacy against a possible danger when such probable risk is involved.

INTRACULAR PAIN

To the Editor—A man aged 29 developed bilateral intra-ocular pain at the age of 17, which has persisted constantly to the present. It is quite comparable to a toothache in nature and does not radiate. The intra-ocular pressure is normal and the patient has worn glasses since the age of 15 for simple myopia. There seems to be acute exacerbations at times in which the pain increases in severity and in addition there is mental depression with loss of ambition. The patient I might add is quite intelligent and a college graduate. The acute attacks remit after a few weeks and recur within five or six months. From general appearances one would not suspect that there is any complaint. Competent neurologists, ophthalmologists, otolaryngologists and internists have not been able to find a pathologic basis for this complaint. The sphenopalatine ganglion and nasal mucosa have been cocaineized with no effect. Most men have considered this a psychoneurosis and psychoanalysis has been advised but the patient does not feel that such an expense would be justified. Please omit name. M D Connecticut.

ANSWER—The sources of intra-ocular pain in the absence of manifest inflammation are so varied that it is extremely difficult to answer this question. One of the most prolific sources of such pain is an anomaly of the muscular apparatus of the eye. Such a condition can be discovered on competent ophthalmic examination and corrected without great difficulty. Another not infrequent source of intra-ocular pain is a low grade chronic inflammation of the posterior paranasal sinuses. This may be somewhat difficult to diagnose and may require repeated examinations of the sinuses with radiopaque material.

RECURRENT FEVER IN CHILD

To the Editor—I have recently seen a girl aged 14 with a history of recurrent attacks of fever since childhood. When she was 3 years of age she had the first recognized attack, which lasted about three weeks. Her mother states that there was no complaint or objective symptoms except weakness and fever. Since that time she has had attacks varying from weekly intervals to bi-yearly intervals and varying little from the first attack, except that recently the attacks have been of shorter duration. She has had measles, mumps and chickenpox. There is no record of rheumatic fever or scarlet fever. She had pneumonia (lobar) and was treated with antipneumococcal serum which shortened the disease very much. This occurred in 1933. I saw her first in October 1935 when the temperature range on five successive days at maximum was 99 100 101 5 102 and 99 F. Thorough physical examination gave no lead and because of the history of weakness I did a Mantoux test which was entirely negative. Her appetite remained good throughout the fever period, and two days after a normal was reached she was up and returned to school. March 4 1936 she began to have fever again and on six successive days it was 99 99 5 102 100 99 8 and 99. The pulse is usually between 80 and 90 with fever. Her hemoglobin is 84 per cent red blood cells 4 300 000 and leukocyte count 7 600 with a normal differential. The urine is normal. She has been carefully observed and taken to specialists but no definite diagnosis has ever been made. I have kept tuberculosis in mind and have thought of various other conditions such as undulant fever, intestinal parasites and even endocrine disturbances but I cannot find evidence to support any definite diagnosis. Could you suggest any diagnostic possibility? Please omit name.

M D New York.

ANSWER—It is obviously difficult to determine the precise cause of the obscure fever from which the patient mentioned is suffering. The causes for these obscure fevers are numerous and one should repeat some of the examinations already made. It would be well to ascertain the condition of the child's tonsils to determine if they were the site of chronic infection. One should also note whether or not there is enlargement of the cervical or other lymph nodes.

An x-ray examination of the thorax should be made to visualize the condition of the lungs and the bronchial and mediastinal glands, as well as the size and shape of the heart. Pulmonary tuberculosis may be detected by the presence of a primary lesion in the lung or by enlargement of the bronchial lymph nodes. The tuberculin skin test should be repeated and, for the purpose of completeness, a Wassermann test should also be made. An agglutination test for undulant fever should be employed. Morning specimens of urine should be obtained at frequent intervals and examined chemically and particularly microscopically for pus cells. If a sterile specimen of urine can be obtained, it should be examined for micro organisms. If

there is any suspicion of kidney involvement, intravenous or oral urography, as suggested by Swick, may be tried in order to visualize the kidney by means of a pyelogram. The abdomen also should be investigated, particularly the size and position of the liver and spleen, and the region of the appendix should be examined for tenderness and rigidity. The fecal evacuations should be examined for the presence of pus, mucus, occult blood, parasites and their eggs, as well as for amebas, and bacteriologic studies of the stool may also be carried out. It must not be forgotten that in some patients all these tests may be negative and the child may present variations in temperature owing to an unstable heat regulating mechanism. Sometimes emotional excitement, fright and fear, as well as excessive muscular exercise may cause temperature elevations of varying degree.

ALKALINIZATION IN ULCER THERAPY—IODIDES IN TUBERCULOSIS

To the Editor—Recently I saw a patient who while suffering from a gastric ulcer took over a long period of time large quantities of mixed alkalis including sodium bicarbonate. He then developed uremia, having marked clinical symptoms and a blood nonprotein nitrogen of 111, urea nitrogen 65, creatinine 3.7. The specific gravity of the urine was fixed at 1.010 and there was a trace of albumin, the reaction being alkaline. The blood pressure was never above 160/80 and during the stage of coma fell to 100/40. The patient has made a remarkable recovery now having a normal blood nonprotein nitrogen the urine is free from albumin and the specific gravity has reached 1.018. The question is Did the alkalosis have anything to do with the production of uremia? If so will you please explain the manner in which it acted? Is permanent damage likely to have resulted? The prevailing opinion seems to be that potassium iodide is detrimental to a tuberculous person. Is this due to the potassium or the iodine? If due to the iodine, do all the iodides have a detrimental effect when given in moderate doses. Please do not mention my name or town. M D, Oklahoma.

ANSWER—One of the objections to the method of treatment of peptic ulcer by accurate neutralization of the hydrochloric acid is the fact that alkalosis may occur. This is manifested by an elevation of the blood carbonates and symptoms of renal irritation. It has been shown by many observers that not alone renal disease but any lesion of the genito-urinary tract may be aggravated by excessive alkali therapy. Fortunately most of these conditions are transitory and improve with cessation of alkali therapy. Occasionally it may be necessary to administer some form of acid medication, as ammonium chloride or even hydrochloric acid, to overcome what seems to be a disturbance in the composition of the colloids of the cells.

Iodides in any form are contraindicated in patients with pulmonary tuberculosis.

CLIMATIC CARE OF INFECTIOUS ARTHRITIS—ARTHRITIS AND PREGNANCY

To the Editor—I am anxious to determine whether or not there are any places in the world relatively free from infectious arthritis. In attempting to look this matter up I find that the literature is vague. My wife has a relatively mild bronchiectasis in the right lower lobe of about ten years' duration. On postural drainage about a tablespoonful of sputum is raised daily with no blood. A year ago she first developed an infectious arthritis in the fingers of the right hand and right wrist. The pain and swelling subsided during the spring and summer. During the past month the condition has recurred in the wrists and right index finger. She is about six months pregnant. What effect, if any does mechoyl have on pregnancy? Could you advise me as to whether or not climatic conditions in any part of the world would offer enough to be considered in making our future locations? Do you have any therapy to suggest? Please withhold name.

M D, Indiana.

ANSWER—The incidence of arthritis occurring among the natives of areas in which the climatic conditions are usually warm and dry and there is an abundance of sunshine has been shown to be lower than in sections of the globe where there is greater humidity and less sunlight. The migration of individuals suffering from arthritis to the dry, warm areas increases the census of such patients in these localities. Also patients suffering from bronchiectasis are benefited by climates in which the humidity is low. A connection between a mild bronchiectasis and symptoms of arthritis has been postulated but not definitely established. In this country the climate of Arizona and New Mexico seems to offer the best advantages for these patients. Unfortunately, in most cases, residence in such climates affords relief only while the patients are there, and return to a climate in which there is colder weather, greater humidity and less sunshine frequently leads to a relapse and an exacerbation of all of the symptoms.

There is no evidence that mechoyl (acetyl-beta-methylcholine chloride) has any deleterious effect on pregnancy, but the various physiologic effects of this drug are still being studied.

Pregnancy in itself adds a strain on the calcium and phosphorus stores of the body. Within recent months there has

been increasing evidence that calcium and phosphorus deficiencies may in some instances predispose to the development of arthritis. It is possible that the onset of this last attack of arthritis when the patient was five months pregnant has a significant connection. Both because of the pregnancy and of the arthritis, one would seem justified in recommending a rather large intake of vitamin D and of calcium in the form of from 1.3 to 2 Gm of calcium lactate daily, in addition to a permanent change of residence to a more suitable climate.

REACTIVE CHEST APPLICATION

To the Editor—By what means do the reactive chest applications as mentioned in the article on therapy of coughs in THE JOURNAL, February 1 act? I can see how there might be a momentary reaction due to the temperature of 60 degrees. But how can any other reaction occur after the compress is on for more than a few moments as in the case of the ambulant patient who leaves it on all night? Surely the skin temperature is reached in a very short time. If a reaction is desired and beneficial why would it not be better to change the compress every ten or fifteen minutes in the care of the bed patient rather than in two or three hours? Earlier in the article the author states that chilling of any part of the skin more especially of the chest causes bronchitis patients to cough more. In my experience cold compresses to the upper part of the chest frequently work like a charm in stopping a cough in children with acute bronchitis when the cough is tight. Textbooks and medical literature are at such a variance with regard to the use of warm and cold compresses in chest conditions that one wonders whether we are all wrong. Please omit name and address.

M D Minnesota

ANSWER—A reactive "chest application" consists of a well wrung-out cold compress covered with dry flannel so that the edges of the latter liberally overlap the moist fabric. It is usually applied at bedtime just before the patient enters his previously warmed bed. If the compress is properly employed, the momentary constriction of the blood vessels of the chest is followed by a hyperemia lasting for hours, and the compress should be dry by morning. It is then well to apply a reactive chest ablation," which is nothing more nor less than a dash or two of cold water applied to the chest followed by brisk rubbing and drying so as to leave the skin of the chest in a glow of hyperemia. It is not the vasoconstrictive action of the cold but the hyperemia reaction from it that is aimed at in this treatment. If the patient does not "react" by feeling warm and comfortable and if the compress feels cold and clammy and chills the patient for more than the very brief initial shock, it does harm and should be promptly discontinued.

INDUSTRIAL HAZARD OF SODIUM SULFATE DUST

To the Editor—For a number of years the so-called salt cake or crude sodium sulfate has been imported through Gulfport, Miss. For the past ten or twelve years I have done the major portion of the accident work on the shipping front. It is only within the last few months that any one has complained of experiencing any bad effect from the inhalation of salt cake dust and these complaints came during an epidemic of influenza among the strike breakers who were later let out. Since that time work on the water front has been limited and every now and then some one complains of suffering bad results from this cause especially when he knows that shipping will be scarce for a few weeks. Will you kindly advise me if there are any statistics showing that a few hours work at a time inhaling this dust will have a damaging effect on the human lung? One man claims to have developed tuberculosis as a result of exposure. As this material contains some sulfuric acid unless too strong I would rather think it a pulmonary antiseptic rather than an irritant. Kindly give me your opinion at your earliest convenience. Please omit name.

M D Mississippi

ANSWER—Sodium Sulfate (Na_2SO_4) is well known to medicine in the form of Glauber's salt ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$), which is the hydrated sodium sulfate. Large doses, such as 30 Gm, are frequently administered, which fact at once marks this substance as essentially free from toxicity. In various portions of the United States and in other portions of the world, sodium sulfate is mined as such. No events have taken place indicating toxic properties arising from the inhalation of sodium sulfate dust. In addition to the natural product sodium sulfate may be manufactured. In the Leblanc process of manufacturing soda sodium sulfate is first made by treating common salt with sulfuric acid. This yields "niter cake," sodium acid sulfate (NaHSO_4). Later this niter cake is changed over to the "salt cake" through further contact with brine.

In the manipulation of both the natural and the manufactured product opportunity for exposure to dust is provided. At no time have any injuries been noted from the action of this salt. In the manufacture of sodium sulfate opportunities for possible harm arise from exposure to the fumes of sulfuric and hydrochloric acid in connection with furnace operations. In some manufacturing processes leading to sodium sulfate sulfur

dioxide may arise and occasionally hydrogen sulfide is produced. However, it is emphasized that these exposures are not to sodium sulfate itself but to intermediate chemicals and by-products incidental to its manufacture.

It is conceivable that some sulfuric acid might be present in uncombined form along with the sodium sulfate, but if so this would serve chiefly as a minor irritant to the skin and to the mucous membranes. In general it may be believed that sodium sulfate is one of the most innocent of industrially used chemicals. The repeated reference in the query to labor difficulties, strikes and shortage of work probably stands in relation to claims for damages associated with this salt as the cause. It is high time that the public should realize that not all dusts are harmful. The chances that sodium sulfate may have been responsible for any substantial injuries under the circumstances described are remote.

FETUS PAPYRACEUS

To the Editor—A mother has been anemic and edematous with a heart lesion. A full term girl was born who was perfect in every respect. Within the sac of fluid there was a 4 months old fetus flattened by pressure from the full term child. There was a small placenta within the sac leading to the fetus. Delivery was made after three hours of labor with rather profuse hemorrhage. The condition today is good.

M.D. Ohio.

ANSWER—The case described is unusual and occurs generally in twin pregnancies but also may be found in cases of triplet gestations. In the case cited, the patient's anemia and heart condition most likely had no etiologic significance. The condition is usually associated with dichorionic or double ovum twins when one fetus dies during the early months of gestation. Instead of being expelled it remains in the uterus, where it and its placenta are compressed against the uterine wall by the normally growing child. The liquor amni of this sac is absorbed or expelled. The dead, flattened fetus is called fetus papyraceus or fetus compressus. Occasionally such a fetus is unknowingly left behind in the uterus after delivery of the live child and if this occurs it may give rise to puerperal infection. The placenta of a fetus papyraceus is small, hard and pale and may be separate from or contiguous with the placenta of the normal child.

SEBORRHEIC DERMATITIS

To the Editor—I have a patient who has an oily crusted dermatitis of the skin of her neck and face. She has been treated by a skin specialist who made the diagnosis of seborrhea due to dandruff sensitivity. She has not responded to various sulfur preparations that he has prescribed and the dermatitis continues to return after short remissions. Please advise treatment. Could an extract of the dandruff be made to desensitize the patient? Please omit name.

M D North Carolina

ANSWER—In a person with seborrheic dermatitis there is apt to develop a superimposed dermatitis from exposure to cutaneous irritants. Frequently it is found that what is thought to be a recurrence of seborrheic dermatitis is in fact rather a flare up of irritant dermatitis on a seborrheic habitus. It is usually due to the action of an irritant to which the person is sensitive. In a woman with a dermatitis confined to the face and neck, the cause should be sought in materials to which she is exposed such as toilet articles or fur collars. Frequently a good history brought out by pointed questioning will suffice to identify the exciting agent. If not, recourse must be had to patch tests done in a routine manner with the substances that are in contact with her face.

Uncomplicated seborrheic dermatitis usually yields readily to topical treatment, although there is some tendency to recurrence. It is generally thought that impaired health with constipation and other gastro-intestinal disturbances, anemia, and other conditions predispose to seborrheic dermatitis but the experience is that it is seen constantly in persons with normal health. Recently there has been some evidence from one source to indicate that *Pityrosporon ovale* may be the etiologic agent.

It is well to have patients with seborrheic dermatitis avoid the things that are likely to flush the face—alcoholic liquors, hot and spicy foods or hot towels to the face. For all practical purposes topical applications with sulfur seem to be the most useful alone or combined with salicylic acid. Suitable formulas are given in all textbooks of dermatology. Sometimes a few exposures to x-rays are necessary and ordinarily with this regimen the dermatitis can be readily got rid of. Treatment with an extract made of the dandruff scales is not commonly practiced, and there has not been sufficient experience on which to evaluate it.

AMENORRHEA, DYSMENORRHEA AND CERVICAL
STENOSIS

To the Editor—Mrs M aged 23 first came to me two years ago complaining of amenorrhea and severe dysmenorrhea dating from six months previously. She began menstruating at the age of 16 was always regular and had a moderate flow lasting from four to five days. Her past history was otherwise negative. The patient was thin had small bones was 5 feet 5 inches (165 cm) tall and weighed 102 pounds (46 Kg). Aside from the underweight no other abnormalities were noted until examination of the genital tract. This showed a third degree retrodisplacement of the uterus with a pinhole external os. There was no cervical or vaginal discharge and no erosion of the cervix. The uterus was freely movable and not tender. There was no tenderness nor were masses palpable in either fornix. In view of this and after pessaries had failed in the treatment of the displacement an operation at which a suspension of the uterus and dilation of the cervix would be done was advised and performed. No curettage was thought best by the surgeon. A glass rod was left in the cervical canal but the pain was so severe that it had to be removed on the fourth day. This procedure gave some slight relief from the dysmenorrhea for the next three periods but had no effect on the amenorrhea. Since her trouble had its onset at about the time she had become engaged to be married one physician felt that there might be some sexual background to her difficulties and therefore advised her to be married. This was also done but with no effect. Since that time I have given her gland products intramuscularly as follows for the first ten days following her period 1 cc of theelin on alternate days. For the remainder of the intermenstrual period 1 cc of antuitrin S. This resulted in no improvement. During the next intermenstrual period she received beginning two weeks before the next period was due 0.5 cc of follutein plus 3 cc of anterior pituitary (Squibb) on alternate days. No improvement was noted. The only drug that gives her any relief from the dysmenorrhea with the exception of narcotics which I have refrained from giving is oral sodium. She has been slightly anemic at times but has always responded to treatment for this. I have not succeeded in getting her to gain any weight. I have thought that she might become pregnant and that this might solve the difficulty but she has not. Any advice you may give me with regard to this case will be greatly appreciated. Please omit name and town.

M D Connecticut

ANSWER—The apparently paradoxical combination of amenorrhea and dysmenorrhea at once suggests stenosis of the cervix. Since the cervix has been dilated this possibility can be almost ruled out, but the possibility of a foreign body in the uterus has not been ruled out. Presumably the patient still has cyclic monthly pain but does not menstruate. She should have a basal metabolic rate determination, since low rates may be accompanied by amenorrhea, more rarely by dysmenorrhea. Even if the rate is not low, say plus 5, small doses of thyroid substance (from 0.03 to 0.065 Gm daily) are worth a trial. The combination of cervical stenosis, retroversion and acquired dysmenorrhea strongly suggests endometriosis. Endometrial implants observed when the uterus was suspended, or increasing nodules in the culdesac at present, would almost assure the diagnosis. Dysmenorrhea due to endometriosis will not be relieved by endocrine therapy unless amenorrhea is produced. Pituitary disorders, including Simmonds' disease, should be considered. If a diagnosis of definite organic or dysfunctional disease cannot be reached, the patient should be encouraged to become pregnant in hope that the ensuing dilatation will be beneficial. Sterility studies may be necessary. Hertzler believes that small doses of potassium iodide are almost specific for dysmenorrhea, atropine sulfate, from 0.4 to 0.6 mg, may be used two or three times a day just preceding the period.

PREPARATION OF POLLEN ANTIGENS

To the Editor—Please send me the detailed technic for the extraction of pollen foods and epidermals. What is the best extracting fluid to use? Approximately how long do these extracted fluids remain potent? Please give the detailed technic for extraction of house dust. What is the technic for dialysis? In the preparation of which materials is this method used? Please send me any references that will be of value to me. Kindly omit name.

M D Ohio

ANSWER—The details for extracting pollens, foods and epidermals are given in New and Nonofficial Remedies in the section on Allergic Protein Preparations. For pollen extracts the 5 per cent solution of dextrose, which is isotonic, is recommended. It must contain 0.5 per cent phenol as a preservative. For foods and epidermals, a solution containing 50 per cent glycerin and 50 per cent of a solution containing 5 Gm of sodium chloride and 27 Gm of sodium bicarbonate per liter is recommended for the extraction. Extracts containing 50 per cent should be diluted with the sodium chloride-sodium bicarbonate solution before injection. These dilutions probably retain their potency for about thirty days if kept in the refrigerator. The glycerin extracts and the pollen extracts prepared with 5 per cent dextrose solution appear to retain their potency for at least eighteen months.

House dust may be extracted with the glycerin in salt solution mixture, about 20 Gm of the material removed with the vacuum sweeper from the patient's home being used. The dust is macerated with 100 cc of the solution over night, and the liquid is pressed out with glass rods and filtered.

Neither the use of 50 per cent glycerin nor the use of 0.5 per cent phenol as a preservative will kill bacterial spores, and it is necessary that all allergenic extracts be sterilized by passing them through Berkefeld, Seitz or Pasteur-Chamberland filters. The filter and all equipment must be sterile and must be adequately protected against the bacteria of the air.

All solutions used for either skin testing or treatment must be of proved sterility when tested according to the method described on page 469 of the U S P XI.

Extracts of foods are freed from irritating dialyzable components by dialyzing against large quantities of distilled water, vegetable parchment or "Visking" sausage casings being used.

SIMULTANEOUS ADMINISTRATION OF ERYTHROL
TETRANITRATE AND POTASSIUM
THIOCYANATE

To the Editor—Is there any incompatibility involved in using erythrol tetranitrate and potassium thiocyanate simultaneously i. e. in the same patient? Is potassium thiocyanate injurious to a patient with chronic nephritis? Please omit name.

M D Massachusetts

ANSWER—There is no therapeutic incompatibility, but it would not be wise to administer the two simultaneously until after the optimal dose of each has been determined. It might then be well to see whether their administration alongside each other improves the result obtainable from either. The precautions required in the administration of thiocyanate are so well given by Barker (The Blood Cyanates in the Treatment of Hypertension, THE JOURNAL, March 7, p 762) that it is best to refer to this article. Nephritis is no contraindication to thiocyanate but an indication for especially guarded dosage.

TREATMENT OF IMPOTENCE

To the Editor—A man aged 60 in excellent health, has always had a normal sex life. There is no venereal history. One testicle has been atrophied since the time he had mumps in adolescence without effect on his sexual activity. About one year ago he began to lose the ability to attain an erection when attempting intercourse except on rare occasions. Whenever erection is attained intercourse is normal with orgasm and ejaculation neither hurried nor delayed. His libido is unquestionably decreased. A peculiar thing about his weakness is that the patient awakens almost every morning about 4 or 5 o'clock with a perfect erection which is maintained without effort for from twenty minutes to a half hour. If the opportunity offers intercourse is normal. He may often arise and go about his toilet without sexual ideas or thoughts and the erection persists for fifteen or twenty minutes when it slowly subsides. It appears to have no relation to a full bladder as the patient frequently will empty the bladder and return to bed and in an hour or so the erection will occur. Also when contemplating intercourse a full bladder is a distinct disadvantage and he is sometimes able to accomplish an erection after emptying the bladder. Is this a usual condition and is it related to age? Is the condition simply senile or is it psychic or emotional? What would you suggest in the care of this case? Of course I appreciate that this is not a life and death matter but it is distinctly annoying and as such merits a doctor's best efforts. Have the new testis hormones proved of any value and what may be expected of them in patients between the ages of 60 and 70? I refer to the crystal line principle isolated by the Swiss as well as such products as androsten. Has any work been done on testicular grafting by the method of Dr Stone of Johns Hopkins in grafting thyroids and parathyroids by first acclimating the graft to the tissues of the recipient by growing them on the tissue juices serum and plasma of the recipient before transferring the gland to its new host? What results have been attained? Please omit name.

M D California

ANSWER—It is not unusual for a man past 60 to find that his sexual ability is getting weaker, although with proper treatment it should become normal for his age. Morning erections are a good sign and the opportunity should be utilized for sexual intercourse if possible. There is no advantage of holding back from intercourse when sexually excited on the theory of conserving the sexual power. Morning erections with or without a distended bladder are not uncommon in both normal and partially impotent persons. From the history it seems that there is a mild priapism present in connection with the partial impotence, a not unusual combination. These mild cases of priapism generally go on to recovery but the blood should be examined nevertheless for the possibility of a leukemia.

Testicular extracts have no effect in cases of impotence for the simple reason that while the testicle makes the hormone, it does not store it but sends it at once into the blood, so that a piece of testicle will have too minute a quantity of hormone

to be of any use. There have been a few good results observed after testicular transplantation, but the cases are few and the results as a rule only temporary. It certainly is not necessary to go through such a formidable operation in the present case, in which a certain amount of ability is undoubtedly present.

The condition in the present case is no doubt due to a weakened condition of the sexual muscles, and stimulation of these muscles is in order. For this purpose the use of the sinusoidal-faradic current of moderate rapidity and as strong as the patient can bear without any pain is most effective. One cable is connected with a rectal electrode and the other with a wet-sponge electrode applied to the perineum and the current is allowed to pass for about ten minutes. Treatments may be given every three or four days. An outdoor life with periods of vacations is distinctly beneficial.

LOCALIZED BONE ATROPHY

To the Editor—An Irish housemaid aged 21 was referred to me for roentgen irradiation of the left elbow because of pain swelling slight redness and limitation of motion of several weeks duration. There was no recent trauma. About six years ago while in Ireland she sustained an injury to her left knee and also probably the elbow. She was not disabled and recovered promptly as far as the elbow was concerned. During the next five years she thinks she hurt her left elbow on several occasions when her left knee gave way and she either fell or tried to keep from falling. Otherwise she has always been well up to her present trouble. Roentgen examination disclosed a marked irregularity in the contour of the external condyle of the humerus numerous circular clearly defined areas of osteoporosis in the condyle which perforate the cortex and similar areas in the head of the radius and olecranon process. The joint space is narrowed. No periarticular soft tissue swelling and no osteo-sclerosis of bone are present. A biopsy by an eminent pathologist disclosed extensive necrosis (partial and complete) of rather compact bone which in places was being revascularized. The diagnosis was post-traumatic necrosis with porofication due to revascularization. A series of diathermy treatments was given and another film just taken shows the areas to be filling in with new bone. I should like to know your opinion as to etiology pathology and references to similar cases if any are on record. Please omit name. M D New York.

ANSWER—The patient apparently has localized bone atrophy, of traumatic origin, involving the elbow, and possibly traumatic arthritis. The injury to the knee six years ago, probably resulted in a loose or fractured semilunar cartilage, which would account for the knee giving way. The repeated injury to the elbow occurring in the course of the falls may account for the changes in the joints and for the osteoporosis. The irregularity of the external condyle is probably the result of an unrecognized fracture, which occurred at the time of the original injury. The roentgenologic and clinical observations substantiate the opinion that an atrophic condition is present. The following references may be of interest.

Key J A Bone Atrophy and Absorption *Internat J Orthodontia* 15 949 (Aug) 1929

Key J A Elzinga Eugene and Fischer Frederick Local Atrophy of Bone I Effect of Immobilization and of Operative Procedures *Arch Surg* 28 936 (May) 1934 II Effect of Local Heat Massage and Therapeutic Exercise *ibid* 28 943 (May) 1934

Middleton, D S and Bruce, John Post Traumatic Osteodystrophy at Joints *Edinburgh M J* 41:49 (May) 1934

Grey E G and Carr, Gladys L An Experimental Study of the Factors Responsible for Noninfectious Bone Atrophy *Bull Johns Hopkins Hosp* 26 381 (Nov) 1915

Sudeck P Ueber die akute (reflektorische) Knochenatrophie nach Entzündungen und Verletzungen an den Extremitäten und ihre klinischen Erscheinungen *Fortschr a d Geb d Röntgenstrahlen* 5 277 1901 1902, Ueber die akute (trophoneurotische) Knochenatrophie nach Entzündungen und Traumen der Extremitäten *Deutsch med Wchnschr* 28 336 1902

Herrmann L G The Diagnosis and Treatment of Post Traumatic Painful Osteoporosis *Internat J Med & Surg* 47 510 (Dec.) 1934

Gurd F B Post Traumatic Acute Bone Atrophy (Sudeck's Atrophy) *Ann Surg* 99 449 (March) 1934

KRUEGER'S METHOD FOR BACTERIAL ANTIGENS

To the Editor—Please send me Dr. Krueger's method of preparing bacterial antigens. In this particular method Dr. Krueger explains how he preserves the antigen without the aid of heat chemicals or any biologic treatment. AUBREY L LEWIS M D San Angelo Texas

ANSWER—Krueger's method (Krueger A P A Method for the Preparation of Bacterial Antigens, *J Infect Dis* 53 237 [Sept-Oct] 1933) follows. Mass cultures of bacteria are grown in Blake flasks on appropriate mediums. The cells are harvested in buffered isotonic solutions and are washed five or six times. After the final centrifugation they are suspended in the buffered solution, and the cell count is determined by the centrifuge sediment method described in an earlier paper (*J General Physiol* 13 553 [May] 1930). The dense suspension is placed in the mechanical grinder (Krueger, A P *J*

Infect Dis 53 185 [Sept-Oct] 1933) and is subjected to the grinding treatment for a period of ten or twelve hours. The suspension is then filtered through a 4.5 or 5 per cent acetate collodion membrane (Krueger, A P, and Ritter, R C. *J Gen Physiol* 13 409 [March] 1930) and is tested for sterility. It has been found that under ordinary conditions ultrafilters are distinctly preferable to Chamberland or Berkefeld candles, since the latter adsorb a considerable fraction of the active antigenic substances from solution. The procedure involves no treatment with heat, nor is there any possibility of denaturation by the action of chemicals."

THROMBOPHLEBITIS WITH INDURATION

To the Editor—A man aged 40 has a small brownish area on the inner side of the ankle just above the malleolus. This is slightly indurated at times underneath and again at times almost goes away. It states that there is no pain about it, but sometimes the induration extends through an area about the size of a silver dollar (38 mm). The skin over this area is slightly brownish but is not scaly. There is no sign of ulceration. Ten years ago the patient had a phlebitis in this leg and states that at times the leg has been slightly swollen since then and again there will be no swelling to amount to anything for months. The patient has no other trouble of any kind. What treatment would you advise for this? I presume there are some deep veins about this center but there are no varicose veins in this leg—at least none of any consequence. W

ANSWER—The condition described is a thrombophlebitic induration with a "resting" infection that occasionally becomes activated. All possible foci of infection should be searched for and eliminated. Teeth, tonsils and prostate are most important. Syphilitic etiology should be excluded. If the phlebitis followed an operation, the source of infection may be in infected pelvic veins. Small doses of x-rays not exceeding 100 roentgens with deep filtration are often helpful in softening the indurated area and clearing up the residual infection. Elastic support in the form of a zinc-gelatin boot or elastic adhesive tape reduces the swelling and also helps to soften the induration. Such indurated areas tend to break down with advancing age and form the base of intractable ulcers.

PSEUDOCOLLOID OF THE LIPS

To the Editor—I have a patient with a condition of the lips which appears to be Fordyce's disease (pseudocolloid of the lips). I have been unable to find anything definite for the treatment of this condition and would appreciate any information you can give me with regard to the etiology treatment and prognosis. Would radium or x-rays be of any value here? Please omit name. M D Minnesota

ANSWER—The lesions in pseudocolloid of the lips are most probably due to the presence of aberrant sebaceous glands in the buccal mucosa. The condition is a harmless one. The discovery is usually accidental and the condition, as a rule, does not give rise to any discomfort or symptoms.

The lesions may be destroyed with the cautery point, or x-rays or radium may be used cautiously to secure involution. Freezing of the parts with carbon dioxide snow is also of value.

MYDRIATIC FOR EYEGROUND EXAMINATIONS

To the Editor—What single mydriatic preparation is most practical for eyeground examination in the office? What is the best after-care to give these patients especially those who insist on driving their automobiles from the office? Please omit name. M D Wisconsin

ANSWER—Probably the most satisfactory single mydriatic for eyeground examination in which the paralysis of accommodation does not enter is 2 per cent eucatropine (euphthalmine). Two instillations at five minute intervals will produce adequate dilatation of the pupil in about fifteen minutes. If accommodation is not interfered with the eye under euphthalmine does not suffer any noticeable deterioration of vision. But, as a preventive against possible attacks of hypertension it is well to instill two drops of 2 per cent pilocarpine at five minute intervals into the eye before the patient leaves the office.

HYPOSPADIAS AND STERILITY

To the Editor—To what extent is a hypospadias with the opening at the base of the glans considered an impediment to impregnation? In a case in question there have been no other abnormalities found in husband or wife that would account for their failure to have children in twenty years of married life and it does not seem to me that the condition mentioned would be of much hindrance to the proper depositing of semen. If published please omit name. M D Kentucky

ANSWER—Hypospadias of the first degree is rarely, if ever an impediment to impregnation.

LENGTH OF USE OF ARTIFICIAL EYE

To the Editor—I have a request from an attorney representing an insurance company as to the average usefulness of an artificial eye. In my own experience this is a very variable matter and depends principally on the care given the eye and the sensitivity of the individual to roughness and the matter of appearance and so on. I have never run across any reference to this in ophthalmic literature and would be very grateful if you can help me answer this question.

GEORGE N. HOSFORD M.D. San Francisco

ANSWER—The average life of an artificial eye depends on many conditions. Of course, the care to which the owner subjects the eye when it is not being worn plays a part, but in addition to that there are secretions from the eye which vary greatly in character. In some individuals these secretions attack the prosthesis so that the eye becomes roughened and even eroded in from six to twelve months. In other individuals that effect is entirely lacking.

A rather exhaustive treatise on artificial eyes may be found in the American Encyclopedia of Ophthalmology, volume I, page 621.

MANDELIC ACID IN PYELITIS

To the Editor—Recently I saw an article by Dr. Helmholz of Rochester, Minn., giving a new drug for the treatment of pyelitis. The article has been mislaid. Can you give me the information as to the drug or where I can find the reprint?

GEORGE J. ASTE M.D., Chicago

ANSWER—The new drug used in the treatment of pyelitis is mandelic acid, which can be used in the form of the ammonium salt in the dose of 3 Gm. four times a day. If the sodium salt is used, it is given in the same dose with 1 Gm. of ammonium nitrate or ammonium chloride four times a day to acidify the urine. The *pH* of the urine must be below 5.5 and the concentration of the acid about 0.5 per cent. This dose is for adults.

References

Helmholz H. F. Successful Treatment by Means of Mandelic Acid of a Child with Urinary Stasis and Infection. *Proc. Staff Meet. Mayo Clin.* 2: 231-232 (April 8) 1936.

Helmholz H. F. and Osterberg A. E. The Rate of Excretion and Bactericidal Power of Mandelic Acid in the Urine. *Proc. Staff Meet. Mayo Clin.* 2: 373-377 (June 10) 1936.

RECIPE BOOK OF AMERICAN PHARMACEUTICAL ASSOCIATION

To the Editor—In Fantus's book, "The Technic of Medication," reference is made to a recipe book. Will you please tell me what that book is about, where obtainable and its price?

CHARLES S. RAND M.D. Jamaica, N. Y.

ANSWER—The Recipe Book is published by the American Pharmaceutical Association and is obtainable from sellers of medical books.

A completely revised edition is now available. The price of this publication is \$5.

TECHNIC OF OPHTHALMIC SURGICAL PROCEDURES

To the Editor—Please send detailed information concerning the use of the Peters modification of the Bishop tendon tucker. Also intracapsular cataract extraction with the use of the Kalt capsule forceps.

CHARLES K. MILLS M.D. McAlester, Okla.

ANSWER—Detailed instructions as to the use of these two instruments do not belong in this column. Probably the best description of the use of the tendon tucker is by Peters himself and can be found in the second edition of "Extra-Ocular Muscles," by Luther C. Peters, 1936, page 303. For the use of the Kalt forceps the reader is referred to *Annales d'oculistique* 162: 489, 1925, or to "Die intra kapsulare Starextraction of Elschning of 1932, page 45 or to "Surgery of the Eye by Torok and Grout, 1925, page 282.

ANTHELMINTICS AS PROVOCATIVE FOR DIAGNOSIS

To the Editor—Is there any advantage to be derived from the administration of a provocative dose of an anthelmintic in an effort to diagnose intestinal parasitic infestation? Please omit name.

M.D. Indiana

ANSWER—Provocative therapy is justified if a prompt diagnosis of worm infestation is demanded so that the time of waiting for the spontaneous passing of the worms or their ova is not available. Castor oil in full dose usually suffices for the threadworm. Santonin may be used for the roundworm, oleoresin of aspidium for the tapeworm.

Medical Examinations and Licensure

COMING EXAMINATIONS

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KENTUCKY Louisville Dec. 2-4 Sec., State Board of Health Dr. A. T. McCormack, 532 W. Main St. Louisville

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MINNESOTA Minneapolis Oct. 20-22 Sec. Dr. Julian F. DuBois 350 St. Peter St. St. Paul

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AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov. 7 Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh (6)

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AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec. 29-30 Application must be sent to the Secretary before Oct. 30 Sec. Dr. Walter Freeman 1028 Connecticut Ave. Washington D. C.

AMERICAN BOARD OF UROLOGY Chicago Dec. 4-6 Sec. Dr. Gilbert J. Thomas 1009 Nicollet Ave. Minneapolis

Tennessee June Examination

Dr H W Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Knoxville, Memphis and Nashville, June 11-12, 1936. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1936)	83.1
Howard University College of Medicine		(1934)	85.5
(1935) 85.1 87.89 (1936) 87.4 89.3			86.4
Harvard University Medical School		(1933)	85.3
University of Pennsylvania School of Medicine		(1935)	85.4
Meharry Medical College		(1935)	84.1
(1936) 81.6 84.6 84.8 85.85 85.1 85.4 85.8 85.9			
86.86 8 86.9 87.1 87.3 87.5 87.8 87.9 87.9 87.9			
88.88 3 88.4 88.4 88.4 88.6 89.3 89.9 90.1			
University of Tennessee College of Medicine		(1935)	83.5
(1936) 78.8 80.4 81.9 82.1 83.3 83.5 83.5 83.6			
84.84 3 84.4 84.6 84.9 85.85 3 85.3 85.5 85.9			
85.9 86.1 86.1 86.3 86.8 87.87.3 87.4 87.4 89.4			
Vanderbilt University School of Medicine		(1929)	81.4
(1935) 84.9 (1936) 82.6 83.3 83.4 83.5 83.8 85.1			
85.3 85.4 85.4 85.5 85.6 85.6 85.9 85.9 85.9			
86.1 86.4 86.4 86.6 86.6 86.6 86.6 87.1 87.6 87.8			
88.88 4 88.6 89.1 89.1 89.1 89.4 89.6 90.5 90.6			
90.6 92.1			

Five physicians were licensed by endorsement from July 8 through August 17. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Georgia School of Medicine		(1933)	Georgia
Tulane University of Louisiana School of Medicine		(1921)	Louisiana,
(1931) Texas			
University of Maryland School of Medicine and College of Physicians and Surgeons		(1935)	Maryland
Washington University School of Medicine		(1924)	Missouri

Michigan Endorsement Report

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports 40 physicians licensed by endorsement from Jan 8 through July 30, 1936. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists		(1931)	California
Georgetown University School of Medicine		(1934)	Penna
Bennett Medical College, Chicago		(1909)	Illinois
Loyola University School of Medicine	(1932)	(1933 2)	Illinois
Northwestern University Medical School		(1934)	Illinois
Rush Medical College	(1928)	(1935 2)	Illinois
School of Medicine of the Division of the Biological Sciences		(1934)	Illinois
University of Illinois College of Medicine	(1934)	(1935 2)	Illinois
Indiana University School of Medicine	(1934)	(1935 2)	Indiana
State University of Iowa College of Medicine		(1930 2)	Iowa
University of Louisville Medical Department		(1895)	Illinois
University of Louisville School of Medicine		(1935)	Kentucky
St. Louis University School of Medicine	(1933)	(1935)	Missouri
Washington Univ. School of Med	(1926)	(1931)	Missouri
University of Nebraska College of Medicine		(1932)	Kansas
Albany Medical College		(1931)	Mass
New York University University and Bellevue Hospital Medical College		(1930)	Illinois
Ohio State University College of Medicine		(1929)	Ohio
University of Cincinnati College of Medicine		(1936)	Ohio
Western Reserve University School of Medicine	(1933 2)		Ohio
University of Oregon Medical School		(1932)	Wisconsin
Jefferson Medical College of Philadelphia		(1932)	Penna
Temple University School of Medicine		(1933)	Kentucky
University of Pennsylvania School of Medicine		(1932)	Penna
Meharry Medical College	(1932)	Georgia	Tennessee
Ludwig Maximilians University Medizinische Fakultät München Germany		(1931)	Illinois

Oregon June Examination

Dr Joseph F Wood, secretary, Oregon State Board of Medical Examiners reports the written examination held in Portland, June 16-18 1936. The examination covered 11 subjects. An average of 75 per cent was required to pass. Forty-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1936)	90.7
University of Southern California School of Medicine		(1936)	87.7
University of Illinois College of Medicine		(1936)	89
Johns Hopkins University School of Medicine		(1936)	88.6
University of Minnesota Medical School		(1936)	90.9
Creighton University School of Medicine		(1935)	89.7
University of Nebraska College of Medicine		(1935)	86.7
University of Oklahoma School of Medicine		(1935)	87.6

University of Oregon Medical School	(1933) 90.5 (1934) 86.8 93.5 (1935) 86.9 87.6	(1932) 81.1
	88.8 88.9 89.6 90.3 90.7 91.2 (1936) 86.3 87.6	
	87.8 87.8 88.8 89.1 89.5 89.5 89.7 89.9 90,	
	90.1 90.1 90.4 90.5 90.9 91.8 92.8 92.8	
Marquette University School of Medicine		(1935) 89

Seven physicians were licensed by reciprocity and 6 physicians were licensed by endorsement from January 24 through July 21. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Southern California School of Medicine		(1935)	California
State Univ. of Iowa College of Medicine	(1920)	(1933)	Iowa
Harvard University Medical School		(1933)	California
University of Nebraska College of Medicine		(1934)	Washington
University of Oregon Medical School		(1934)	California
Jefferson Medical College of Philadelphia		(1925)	California

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists		(1936 3)	N. B. M. Ex.
Rush Medical College		(1933)	N. B. M. Ex.
University of Oregon Medical School		(1933)	N. B. M. Ex.
University of Toronto Faculty of Medicine		(1929)	N. B. M. Ex.

Book Notices

The Art of Treatment. By William R Houston A.M. M.D. F.A.C.P. Cloth Price \$5 Pp 744 New York Macmillan Company 1936

This new volume on therapeutics is arranged in seven books. In book I, called "The Art of Treatment," there are the following sounding titles: The Scope of Therapeutics, Surgical Treatment, Pharmacology, Therapeutic Thinking, Diagnosis, Honesty, Economics, and The Doctor as a Therapeutic Agent. Finally several pages, under the title Order of Presentation, tell just how what follows is to be arranged. There are eighty pages, all told, of this.

Book II is called "Patients Who Are To Be Treated Chiefly By Nursing Care," and its first six pages are devoted to a description of what is meant by this title. There then follow twenty-eight pages on the care of typhoid, which is offered as an example of nursing but in which it is difficult to separate the portions on nursing from discussions of venoclysis, "minus" decompensation, and many other things not all of which apply directly to the disease under discussion. Then in an interlude of about three pages the author enlarges on such titles as "What Is the Worth of Nursing Care?" "Trade Unionism," "Fidelity of Execution" and "Nurse as Home Teacher." The homily over, nursing care as applied to typhoid is resumed and continued with somewhat less prolixity through eight more pages. Immediately thereafter one encounters "Common Disorders," in which category there have been placed arbitrarily twenty-three entities, among them those familiar everyday diseases: leprosy, plague and yellow fever. Apparently it is felt that any one who has read the preceding 128 pages will need little further guidance in handling these common things—at any rate little is offered in precise form in connection with the discussion of any of them. But still there is not an end of nursing care for book II approaches its close with sixteen pages in which pneumonia, erysipelas, scarlet fever, rheumatic fever and sepsis find respective places in a chapter entitled "Diseases Treated Chiefly By Nursing Care But in Which There Is Some Question of a Specific." The final eight and one half pages of the book are devoted to "Diseases Chiefly of the Nervous System."

Book III bears the title "Specifics" and considers the paraneurotic endocrine, deficiency and hematopoietic categories, together with a group of diseases treated by serums and antigens and another set of three "miscellaneous" conditions, which are acidosis, alkalosis and Asiatic cholera. Treatment is nowhere succinctly discussed here and in some instances the principal modes of therapeutic attack are not even fully indicated. For example, in the brief section on malaria the "standard" treatment is quoted from the 1918 report of the National Malaria Committee, and its worth in the light of present-day knowledge is then expounded as follows: "This very simple statement of the National Committee as to how malaria should be treated is one that might well be put in the hands of every layman who lives in a malarious district. It might be printed weekly in the county paper or even placarded on the barns and fences to the community's advantage. It is easy to see, however, how sure of himself in a somewhat embarrassing position."

This standard treatment he may have used on plow hands and dock labourers to advantage, but when he is summoned to attend the big boss, who is already aware of the details of the standard treatment, it is quite natural for the doctor to feel that something more than the standard treatment is expected of him—some niceties and refinements of the therapeutic art which the common labourer could not command. Furthermore, the big boss very likely expects rather assiduous attention from the doctor, and what can the doctor do on his several visits, if the whole plan of treatment has been widely published and is known to everyone? All would of course be easy enough if the refinements in the treatment of malaria were better than the standard treatment. Unfortunately they are not so good and every departure from the standard treatment weakens the therapeutic attack on the disease." Not a single word is offered here indicating the existence of such a thing as treatment by shorter courses and smaller doses of quinine the plan of malaria therapy which several years ago gained the stamp of approval of the Malaria Commission of the League of Nations and is today advocated by all the world's foremost authorities in the treatment of the disease. Furthermore, what little there is in the text on plasmodium and atabrine is principally in the form of a somewhat facetious admonition against the trial of these new remedies.

Book IV turns to the nervous system again and presents "Conditions in Which the Chief Therapeutic Method Is Psychotherapy or Guidance." The author states that, if the febrile conditions are left out of account, one half the practice in internal medicine is in conditions lying within the realm of this title. So he devotes 239 of his 725 pages of text to book IV. Of course this just consists in going on and on—sometimes instructively, here and there amusingly, but on and on for a full third of the length of the book.

Book V is "Diseases Which Impose a Limitation upon Life as the Condition of Treatment", book VI "Disorders in Which Physiological Considerations Guide Treatment", book VII and last, "Conditions in Which Treatment Is Tentative and Experimental." There are two indexes, one a general index, which is completely inadequate, and an index of names, which is literally a listing of the names of men mentioned in the book and the page or pages on which such mention is made, fortunately the latter completely useless appendage occupies only two and one half pages. Bibliographic references are scattered throughout the book.

Dr Houston says that the design of his work is to encourage therapeutic thinking, one may doubt that he has succeeded in doing as much as that but certainly he has himself thought very ponderously and to read the present rambling record of his cogitations is at times an entertaining task. But young men in search of authoritative detail and practical guidance are not likely to find them here or apt to cherish the philosophic ripeness that is offered as a substitute.

Traitement chirurgical de la maladie de Basedow et des goitres toxiques
Par L. Bérard professeur de clinique chirurgicale à la Faculté de médecine de Lyon et R. Peycelon. Paper. Price 40 francs. Pp 170 with 42 illustrations. Paris: Masson & Cie 1936.

American students of goiter will be interested in this excellent contribution to the literature based on thirty years of clinical and operative observations. They will appreciate the knowledge the authors have not only of the European but also of the American literature. The subject matter, as indicated by the title, is largely of a surgical nature and no attempt is made to discuss diagnosis in detail. The authors however, oppose the dual theory of hyperthyroidism as advocated by the Plummer school and consider exophthalmic goiter and toxic adenoma merely variations of the same disease. In support of this contention they assert that iodine favorably influences both types, a contention that has recently been disproved. Likewise, the authors contention that unfavorable results may occur in exophthalmic goiter from too large doses of iodine is questionable. The authors frankly admit that their mortality statistics of 4 per cent are higher than those reported by American writers. They offer a logical reason for this because many of their cases do not come to operation until the disease has been active for many years. Resection of the thyroid gland is considered the most successful treatment of exophthalmic goiter. The disease in older persons rarely attains the acute

stage it does in the young, and it is more easily cured and without as great a risk. Digitalis is used only in case of decompensation. Iodine is used in the preoperative and post-operative care and continued in gradually decreasing doses. Iodine has replaced the necessity for ligation and x-ray therapy. Patients are kept in bed at least a week before operation (a procedure now seldom used here). Subtotal resection of the gland similar to the method used in America is the preferred operation. The capsule is resutured after a rather radical resection and a midline drain is used. There is an excellent discussion of the surgical technic used in the various types of operations, which is well illustrated. Local regional anesthesia has superseded general anesthesia. The important complications, as hemorrhage, nerve paralysis and tetany, are carefully reviewed. In discussing the end results, the fact is pointed out that what some consider-as cures, others term improvement. The authors' statistics show a total of 84 per cent good and 58 per cent excellent results. Again they justly conclude that better results would occur if the patients came to operation sooner. The value of the metabolic rate is appreciated but the clinical criterion is more certain. There are chapters dealing with toxic adenoma and its surgical treatment, also with thyroid cardiac disorders and cancer. This book will especially interest American surgeons who desire to know the current continental opinions regarding the operative treatment of toxic goiter.

The Toxemias of Pregnancy By Dame Louise McIlroy D.B.F. LL.D. M.D. Consulting Obstetrician and Gynaecological Surgeon Royal Free Hospital London. Cloth. Price \$5. Pp 355 with 19 illustrations. Baltimore: William Wood & Company 1936.

Dame McIlroy's views on the engrossing subject of the toxemias of pregnancy have always attracted commendatory attention from the American medical public. She has now elaborated and embodied certain of her earlier writings in this monograph, together with a comprehensive and discriminatory review and abstract of recent opinions. It is interesting to note that she considers the symptoms of toxemia as being due to disturbances in metabolism, discarding the idea of a specific toxin. Moreover, she embraces the current but still disputed opinion that vomiting or convulsions, for example, are not separate forms of toxemia of pregnancy but merely varying symptoms of metabolic disturbances associated, perhaps, with some deficiency in nutrition or some pre-pregnancy disease. The entire monograph is precisely the dignified and conservative type of exposition of this baffling subject that would be expected from Dame McIlroy's pen. It should be gratifying to us in this country to note the consideration and space she gives to the work of American investigators. The monograph is satisfactorily divided into sections, discussing in turn mortality rates from toxemia, theories regarding its causation, dietetic and nutritional disturbances in pregnancy, and the symptoms, the effects and the treatment of pregnancy toxemia. The text is made complete by a comprehensive bibliography. Throughout the book there is only one jarring note. This is the frequency with which various pharmaceuticals are recommended under their trade names or with the specification that the preparation of some particular firm be used. The book may be warmly recommended not only to the research worker but also to the practitioner, who will find its many suggestions regarding prevention and treatment especially useful.

Textbook of Gynecology By Wilfred Shaw M.D. F.R.C.S. F.R.C.O.G. Assistant Physician Accoucheur St Bartholomew's Hospital. Cloth. Price 18s. Pp 538 with 238 illustrations. London: J & A Churchill Ltd 1936.

Shaw states in his preface that "this book is intended for the use of students presenting themselves for qualifying examinations, and it may also be of service to practitioners." The author's intentions have been admirably fulfilled. Students will find in this textbook a straightforward exposition of each of the major subjects in gynecology. Ordinarily difficult topics such as pelvic anatomy and embryology are dealt with clearly and concisely, and are made interesting by timely mention of clinical points. Discussions are not interrupted by references to medical literature, moot points are passed over lightly. The doctrines set forth are sound and, with few exceptions, will be acceptable in this country. Practitioners will find the book of practical value. Emphasis is laid on the common disorders, the reader is taught to rely on himself, not on the laboratory, for diagnosis, the sections on treatment are excellent and give

definite, well tempered advice. Authors will find this book a model of good medical writing. The style is fluent, lucid and simple, the chapters are concisely organized and carefully integrated, the entire work is well proportioned and perfectly designed for its purpose. There are adequate illustrations, including good photomicrographs. The publisher's work is flawless. Items that might well have received more emphasis are the electrical cautery treatment of erosions, the use of the basal metabolism test in studying menstrual dysfunctions and sterility, the fitting of contraceptive diaphragms, the importance of curettage prior to x-ray treatment of myomas, and lymphogranuloma inguinale. American gynecologists may be astonished to find pain and cachexia listed among the four "main symptoms" of cervical carcinoma. Indeed, one gains the impression that biopsy of the cervix or of the endometrium is seldom necessary, a point of view entirely contrary to ours in this country. In conclusion, this excellent textbook can be strongly recommended to teachers, students and general practitioners. Specialists in gynecology will find it of little reference value, but it was not designed for them.

The Townsend Crusade. An Impartial Review of the Townsend Movement and the Probable Effects of the Townsend Plan. Paper. Price 25 cents. Pp. 93. New York: The Committee on Old Age Security of the Twentieth Century Fund Inc. 1936.

Few, if any, proposals put before the American people in recent years have had so wide an emotional appeal or have so quickly enlisted vast multitudes of followers as has the Townsend plan. Dr. Townsend, then already retired and living near Los Angeles, lost most of his savings in the crash of 1929. So did many other elderly persons. Dr. Townsend had to resume the practice of medicine and was employed to supervise the care of indigent elderly persons in Long Beach. He is not an economist, but the plight of his patients set him to thinking of some way that would save elderly persons from penury after devoting their lives in the main to rearing families. He relates that he was finally moved to "do something about it" by the sight of three old women sifting through the contents of a garbage can—a picture which provoked him into indignation to the point of profanity. With a few dollars of his own money he ordered printed copies of the original petition for \$200 pensions and advertised for volunteers to circulate them. The growth of the movement was fast. Within fourteen months it was claimed by its supporters that the plan had the backing of 3,000 Townsend clubs, an average of nearly seven to each congressional district in the country, the clubs at that time having a minimum membership of 100 and a maximum up to 1,700.

The report contains sixty pages of readable material devoted to a review of the old age pension problem, the burden that a \$200 a month pension would place on all other citizens, the handicap thus placed on independent business and the huge overestimates made by the Townsend plan adherents as a result of using the wrong base for their figures on transactions taxable at 2 per cent. The committee states that the Townsend illusions are a sensational demonstration of the need for realistic thinking.

It is suggested that an increase in the present governmental assistance for the aged can be obtained in two ways and in these ways only: (1) an increase in the national income, which can come only from an increase in the production of goods and services, or (2) a further diversion to the aged of the income of the rest of the population.

The committee concludes from its study that anything like \$200 a month as an old age pension is utterly impossible with our present economic machinery. It seems however, that the pensions paid under existing legislation are not adequate, and that it should be possible to pay larger amounts.

Other important observations and conclusions are that forced expenditure such as is contemplated in the Townsend plan, would not increase the speed with which the income of the aged would be spent, forced expenditures would neither increase nor decrease purchasing power, to maintain the \$200 a month figure on which the hopes of many elderly persons are based would reduce a worker's salary by one eighth while the accumulated taxes would advance the price of common articles by one third, and, finally, an attempt to put the plan into operation would gravely aggravate the very ills which it seeks to cure. The report is readable and illuminating. It is a

timely analysis of the program, which is the basis of one of the largest present-day movements. It is impossible to predict what changes may be made in this crusade, but this report will enable interested persons better to understand the genesis of the movement, the underlying motives, the difficulties and failures exposed, and the general problem of aid to the aged.

Valor terapéutico de los extractos de corteza suprarrenal. Por J. Sánchez Rodríguez y Juan Barbudo. Trabajo laureado con el Premio Rodríguez Abaytua 1934 de la Academia Médica Quirúrgica de Madrid. Paper. Price 5 pesetas. Pp. 72. Madrid: Imp. Sáez Hermanos. 1935.

This monograph, including fifty-seven pages of text and a list of 352 references, presents a good compilation of literature on adrenal cortex extracts, assembled in the manner characteristic of many recent review articles in medical research and physiology. Under therapeutic applications of adrenal cortex extracts, reports on treatment of the following conditions are included: Addison's disease, gastroduodenal ulcer, ovarian insufficiency, intestinal intoxication, neuritis, infections, asthma, muscular dystrophy, cancer, hyperthyroidism, cutaneous diseases, mental diseases and other disorders. Critical discussion of these reports is lacking. With twelve specific ailments and any number of additional conditions under the category of "other disorders" for which adrenal cortex extracts have been employed, usually with alleged benefit, it would seem that at last the elixir of life has been found or else we are dealing with a literature that bears close resemblance to the adventures of a certain vegetable compound. The authors could have improved their publication by including a critical discussion of some of the remarkable inconsistencies (or absurdities) in the literature cited, e. g., hyperthyroidism has been alleged by some surgeons to be successfully treated by reducing adrenal function (partial adrenalectomy) while certain medical men have claimed similar benefit from adrenal extracts, which means increased adrenal function. The same paradox can be found in the literature on the treatment of gastric ulcer. Can it be that hyperthyroidism and gastric ulcer are related etiologically to hyperadrenalism in the surgical clinic and to hypo adrenalism in the medical clinic? Adrenal cortex extract appears to be endowed with Dr. Jekyll-Mr. Hyde potentiality, for it has been credited with capacity to increase the basal metabolic rate where increase is desirable (Addison's disease) and to decrease it when indicated (hyperthyroidism). In hypertension it has been reported to lower the blood pressure, while it raises the pressure in adrenal insufficiency. Of course, these seemingly inconsistent observations become quite credible if one accepts, without question, the claim that an adrenal extract produced remarkable improvement in a patient with Addison's disease who (according to a second report) apparently was dead two and a half months prior to the date of the reported improvement! The authors did well to avoid more than is included in their monograph. The literature is too bewildering. If and when adrenal extracts of uniform composition and activity become available and more reliable, well controlled experimental and clinical studies are made, the literature will lend itself better to consideration in book form. At present a monograph on adrenal extracts could best serve a useful purpose when limited to unbiased, fearless, critical consideration of existing literature. Such a book would constitute an interesting commentary on present-day endocrinologic "research."

Vitality and Energy in Relation to the Constitution. By T. E. Hammond, F.R.C.S. Surgeon, The Royal Infirmary, Cardiff. Cloth. Price 12s. 6d. Pp. 314. London: H. K. Lewis & Co. Ltd. 1936.

It is difficult to evaluate this book. On superficial reading it would be grouped among the many discursive contributions of clinicians which have little positive scientific or medical value. Dr. Hammond is certainly not widely read in the field of constitution, quite apart from the integrating fields of medicine. The text is not coherent, the case reports are sketchy. But with all these handicaps it reflects the intelligent observations of a surgeon who has watched his patients carefully and who is aware of the fact that our modern medicine with its emphasis on "rare cases and research" is somewhat lacking when it comes to the practical application of our vast store of scientific knowledge to the individual patient. Dr. Hammond feels the need of a wider comprehension of the individual. In his book there is no detailed inquiry into the organic changes of his patients; there is no clinical investigation in the strict sense, rather the groping for a concrete definition of the

ing of constitution, vitality, tonus, physique and stamina—the various chapter headings used in the book. What Dr Hammond does do is to bring into focus a type of inquiry that is beginning to concern a larger group of physicians, for there are a number of similar books in the continental literature where the trend is definitely labeled as hippocratic. But, while the Greek school was (considering the limitations) always precise and clear, many of these books are rather nebulous and uncertain, and consequently it is doubtful whether medicine will be advanced by such contributions, much though one may appreciate the underlying point of view and the underlying motive. “That things happen is nothing that they should become known, everything” (Friedell). Hammond’s book discusses things that happen clinically, from an intelligent point of view, and one that may be new to many, unfortunately it contributes nothing concerning the “why” of the happening.

Report on the Works Program. Harry L. Hopkins, Administrator. Works Progress Administration. Division of Research, Statistics and Records. Paper. Pp. 106 with illustrations. Washington. D. C. Supt. of Doc. Government Printing Office. 1936.

This is a descriptive and statistical account of the Federal Works Program. The works program is a consolidation of the emergency work activities financed by funds appropriated under the Emergency Relief Appropriation Act of 1935. This act gave expression to the policy that in place of direct relief, aid for the unemployed was to take the form of useful public work. Under the program, 3,850,000 persons were employed at the end of February 1936. Some of the activities of the program described in this report are the construction of farm-to-market roads which will provide improved highways for millions of farmers—these road projects represent a value of \$160,000,000; the construction or repair of 5,300 school buildings, the erection or repair of 4,200 public buildings (excluding schools), the construction or improvement of 5,000 parks and playgrounds; the installation or repair of 6,300 water and sewer system plants, the completion of 328 airport projects, the installation or repair of 130 electric utilities systems, and assistance to 289,000 youths of high school and college age to enable them to continue their studies and to keep them out of the present overcrowded ranks of labor. There has been undertaken a nation wide cultural program to provide suitable employment to those of the relief population normally engaged in artistic endeavor. Writing, music, painting and drama have always been recognized as vital aspects of civilized life. Many who devote themselves to these cultural activities do not have the physical stamina to engage in the more arduous labor of construction. The Public Works Administration has issued grants and loans of approximately \$480,000,000. Funds provided locally account for some \$260,000,000, or 35 per cent of the total cost of projects, which was \$743,000,000 at the time this report was prepared. Under the Resettlement Administration more than 333,000 destitute farm families in all parts of the country (as of Nov. 30, 1935) were being assisted in readjusting their debts, obtaining necessary capital goods and the like. Plans are being perfected for the transfer of 20,000 families from submarginal lands to places better suited for agriculture. Those who are interested to learn something of the complexity and magnitude of these activities of the Federal Works Progress Administration program will find much material for serious reflection in this report.

Conflicts Between Preschool Children. By Arthur T. Jersild and Frances V. Markey. Child Development Monographs. Monograph No. 21. Paper. Price \$1.80. Pp. 181. New York: Bureau of Publications, Teachers College, Columbia University. 1935.

This is one of the series of monographs on child development and brings “factual information to bear on the time-honored subject of the social versus the individualistic nature of man.” The material was derived from an observational study of the aggressive, resistant and hostile behavior of children between 2 and 4 years of age as seen in the nursery schools and kindergartens. The experimental conditions were varied and well controlled and the authors’ observations are of great interest from the sociological as well as psychological aspects. The monograph is informative and provocative. There is a wealth of objective data which should aid our understanding of behavior patterns, both natural and culturally determined.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians. Payment on Account as Tolling Statute of Limitations.—The plaintiff, a physician, brought suit against the defendant in July 1935, in the city court of Shreveport, La., for \$125 allegedly due for professional services. A balance of \$68 was due him for services rendered to the defendant and members of his family up to the close of 1931. On March 15, April 12 and 23, and May 18, 1932, he rendered additional services, for which a charge of \$9 appeared on his books. On Sept. 6, 1932, the defendant paid the plaintiff \$10. For services rendered thereafter the plaintiff’s books showed additional charges of \$58. The defendant contended that the physician could not now maintain a suit for the \$68 due for services rendered up to the end of 1931 because in Louisiana, by statute, actions on oral or implied contracts must be instituted within three years from the accrual of the cause of action. The physician, however, argued that the payment of \$10 made Sept. 6, 1932, interrupted the running of the statute, since it operated as an acknowledgment of the debt and as a payment on account, and the statute should be computed from that date. The \$10 paid by him, the patient answered, was intended only to pay for the services rendered by the physician on March 15, April 12 and 23, and May 18, 1932, and was not intended to be used as a credit against that portion of the account which he now contends is barred by the statute. From a judgment in favor of the physician, the patient appealed to the court of appeal of Louisiana, second circuit.

A partial payment on an account, said the court of appeal, is an acknowledgment of liability on that account and operates to interrupt the running of a statute of limitation or prescription. Therefore, if the payment made by the defendant on Sept. 6, 1932, was intended to be a credit on the whole account to that date, the suit, being instituted in July 1935, has been timely instituted. The court then undertook to dispose of the defendant’s contention that that payment was made for the restricted purpose of covering the services rendered by the plaintiff on March 15, April 12 and 23, and May 18, 1932. A perusal of the account, the court said, shows that the defendant paid \$10 on account in December and in seven other months in 1931. He made no further payment until Sept. 6, 1932, when the payment in question was made. On the face of things, it would appear that this last payment was merely in keeping with the course he had followed in making the eight prior payments. There was as much reason that this payment should have been intended to apply as a credit on the entire account as there was that the eight other similar payments should have been so intended. The court also deemed it significant that the \$10 payment made in September 1932 overpaid by \$1 the charges the defendant claimed it was intended to pay. The court further thought it unreasonable to believe that the physician would have accepted the payment under the restrictions claimed by the defendant. It concluded that the payment in question was made without any restrictions whatever as to its application as a credit on the entire account, that it operated as an acknowledgment of liability on the entire account and interrupted the running of the prescriptive period. The judgment in favor of the physician was accordingly affirmed.—*Williams v. Plumb (La.)*, 166 So. 896.

Workmen’s Compensation Acts. Tuberculosis Allegedly Activated by Oil Field Gases.—The claimant, an oil field worker in the course of his employment, to “thaw out” some pipe connections poured boiling water on them. When the water struck the connections and crude oil, gas or vapor arose. The claimant began to choke and gasp and lost consciousness. He was forced to quit work for the day and, although he returned to work on the next day, the third day he quit his work permanently because of his physical condition. He claimed to be suffering from active pulmonary tuberculosis and alleging this to be the result of the industrial accident, he instituted proceedings for workmen’s compensation before the

Oklahoma industrial commission Medical witnesses, on behalf of the worker, testified that prior to the industrial accident he was affected with dormant tuberculosis, of which he was not aware and which did not then constitute a disability, and that the choking, gasping and inhalation of vapors or gases while he was attempting to thaw out the frozen connections changed his tuberculous condition from one of dormancy to one of activity. To review an award in the claimant's favor, the employer brought an original proceeding in the Supreme Court of Oklahoma.

The employer challenged the competence and the sufficiency of the medical testimony adduced by the claimant to show the causal connection between his alleged disability and the industrial accident. On behalf of the employer, a medical witness, who was a specialist on chest diseases and who had also made a special study of oil field gases and vapors testified before the industrial commission that the worker did not have tuberculosis but was suffering from emphysema and other associated complications and that the alleged accident, if it occurred at all had nothing to do with the claimant's condition. He further testified that oil field gases were not productive of tuberculosis. The employer argued that since all the medical witnesses who testified on behalf of the claimant were general medical practitioners, and not specialists, they were not qualified to express an opinion concerning the causal connection between the present condition of the worker and the industrial accident. Ordinarily, said the Supreme Court of Oklahoma the difference between the testimony of an ordinary physician and a specialist in a given medical field is one which relates to the weight of the evidence and not to the competence thereof. After an examination of all the medical testimony, the court was unable to agree with the contention of the employer. A witness who testified on behalf of the worker stated that, while he was without detailed technical knowledge of the chemical contents of different oil field gases, he was sufficiently familiar with them to know that some were irritating and that some were not, that regardless of whether the gases inhaled by the worker were irritating or nonirritating they might, and in this case did, in his opinion, produce the worker's disability, and that nonirritating gases could reduce the oxygen content of the air, thus causing the victim to gasp and choke and thereby activate dormant tuberculosis. The court believed that the conclusions announced by the physicians who testified on behalf of the worker presented a question of fact for the industrial commission which was determined in the claimant's favor and it refused to announce a rule of law that would compel a fact-finding body to disregard the testimony of a general practitioner of medicine merely because it is opposed by that of a specialist in a given field. However, the award in favor of the claimant was reversed because of error committed by the commission in computing the amount of compensation to which the worker was entitled. The case was remanded to the commission for further proceedings.—*Skelly Oil Co v Rose (Okla.)*, 55 P (2d) 1019

Narcotics Entrapment of Physician, Prescribing in "Good Faith" Construed—The defendant, a licensed physician and pharmacist who operated a drug store, was convicted of violating the Illinois narcotic drug control law and was sentenced to one year imprisonment. He appealed to the Supreme Court of Illinois.

The evidence on behalf of the prosecution tended to show that the prosecuting witness had purchased morphine regularly from the defendant for three or four months prior to April 10 and that the defendant had never on any occasion examined him. In making the purchases, the prosecuting witness testified, he informed the defendant that he was getting the narcotics for his wife who was an addict. On April 10, according to the evidence, the prosecuting witness, pursuant to prearrangements with two police officers purchased from the defendant \$3 worth of morphine tablets, with money supplied by the officers. The morphine purchased was delivered to the officers. Two days later, the witness purchased, pursuant to similar prearrangements, an additional supply of morphine tablets from the defendant and paid for them with a dollar bill, the serial number of which had been noted. This supply was likewise delivered to the officers, who were waiting outside. The arrest of the defendant followed immediately and the dollar bill was found

in his possession. The defendant testified, on the other hand, that he had never sold narcotics to the prosecuting witness prior to April 10 and that on that day he examined the witness and detected a mitral murmur, a "hard" pulse, and a cough associated with restlessness and shakiness, that he sold him twelve "sedative tablets," that on April 12, on being informed by the prosecuting witness that he had lost the supply of tablets sold him on April 10, he sold additional tablets without further examination.

The defendant contended, among other things, that he was unlawfully trapped. Entrapment, said the court, constitutes a valid defense if officers of the law inspire, incite or lure a defendant to commit a crime which otherwise he had no intention of committing. Officers may, however, legally afford opportunities for the commission of a crime and may use artifice and stratagem to catch those actually engaged in criminal enterprises. In the instant case, the court said, the officers did no affirmative act to incite or persuade the defendant to sell the morphine. They merely afforded him an opportunity to violate the statute. In doing so, they acted within their legal rights.

The narcotic drug control law was not unconstitutional, the court said, in providing that "a physician, in good faith and in the course of his professional practice only, may prescribe, administer, or dispense habit forming drugs." The use of the phrase "good faith" did not result in ambiguity and uncertainty. In *Crouch v First Nat Bank* 156 Ill 342, 40 N E 974, "good faith" was held to mean "honest, lawful intent," and in *McConnel v Street*, 17 Ill 253, it was held to mean "the opposite of fraud and bad faith." The phrase, said the court in the present case, has a definite and well understood meaning. It is free from ambiguity and its use does not violate the due process clause of the state and federal constitutions.

The trial of the defendant began on the day that the narcotic drug act was repealed and on which the uniform narcotic drug act became effective. The defendant was sentenced under the former act. Because the uniform act reduced the penalty for a first offense, the court was of the opinion that the trial court should have permitted the defendant to elect under which law he desired to be sentenced, as authorized by an Illinois statute. The judgment was therefore reversed and the case remanded to the trial court to accord that opportunity to the defendant.—*People v Guagliata (Ill.)* 200 N E 169

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, Boston, Oct. 20-22 Dr. Franklin P. Lowry 313 Washington St. Newton Mass. Secretary
- American Association of Railway Surgeons, Chicago, Nov. 5-7 Dr. Daniel B. Moss 547 West Jackson Blvd. Chicago Secretary
- American Clinical and Climatological Association, Richmond Va. Oct. 26-28 Dr. Francis M. Rackemann 263 Beacon St. Boston, Secretary
- American College of Surgeons, Philadelphia, Oct. 19-23 Dr. George W. Crile 40 East Erie St. Chicago, Chairman Board of Regents.
- Dr. American Public Health Association, New Orleans, Oct. 20-23 Dr. Reginald M. Atwater, 50 West 50th St. New York, Executive Secretary
- American Society of Tropical Medicine, Baltimore, November 18-21 Dr. N. Paul Hudson, Department of Bacteriology, Ohio State University, Columbus, Ohio Secretary
- Associated Anesthetists of the United States and Canada, Philadelphia, Oct. 19-23 Dr. F. H. McMechan 318 Hotel Westlake, Rocky River, Ohio Secretary
- Association of American Medical Colleges, Atlanta, Ga. Oct. 26-28 Dr. Fred C. Zapffe 5 South Wabash Ave. Chicago Secretary
- Association of Military Surgeons of the United States, Detroit, Oct. 29-31 Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C. Secretary
- Central Society for Clinical Research, Chicago, Nov. 6-7 Dr. Lawrence D. Thompson 4932 Maryland Ave., St. Louis Secretary
- National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5 Mr. Lewis H. Carriss 50 West 50th St. New York, Mass. Director
- New York State Association of Public Health Laboratories, Albany, Nov. 6 Miss Mary B. Kirkbride, New Scotland Avenue, Albany, Secretary
- Omaha Mid West Clinical Society, Omaha, Oct. 26-30 Dr. J. D. McCarthy 107 South 17th St. Omaha Secretary
- Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4 Dr. Donald S. Childs 607 Medical Arts Building, Syracuse, N. Y. Secretary
- Southern Medical Association, Baltimore, November 17-20 Mr. C. L. Loran, Empire Building, Birmingham, Ala. Secretary
- Southwestern Medical Association, El Paso, Texas, Nov. 19-21 Dr. Orville E. Ebert 116 Mills Street, El Paso Secretary
- Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5 Dr. Kelly Cox, 1719 Pacific Ave. Dallas Secretary
- Tri States Medical Society of Texas, Louisiana and Arkansas, Longview, Texas, Oct. 26-27 Dr. John M. Felt, Mt. Pleasant, Texas Secretary
- Western Surgical Association, Kansas City, Mo. Dec. 11-12 Dr. A. H. Montgomery 122 S. Michigan Blvd., Chicago Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

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- Effect of Gastric Juice Bile Trypsin and Pancreatin on Insulin with Alcohol. H. Blotner, Boston.—p. 263
- Advantages of Vacuum Dried Complement for Use in Routine Wassermann Reaction. F. Boerner and Marguerite Lukens, Philadelphia.—p. 272

"Depepsinized" Human Gastric Juice in Treatment of Pernicious Anemia—Fitz-Hugh and Creskoff decided to review some of Greenspon's experiments. In summarizing their observations they state that in three patients in the relapse phase of pernicious anemia intramuscular injections of "depepsinized" concentrates of fasting gastric juice obtained from themselves failed to produce significant reticulocyte responses. In one patient the oral administration (of 1,000 cc in two doses) of "peptically inactivated" normal fasting human gastric juice failed to produce a truly significant reticulocyte response (i. e., no greater reticulocytosis than the authors have observed to occur spontaneously in relapse phases of pernicious anemia). In two patients the intramuscular injection of depepsinized normal fasting human gastric juice concentrates failed to produce significant reticulocyte responses. Thus the authors' experiments fail to substantiate the results and hypotheses of Morris and his co-workers and of Greenspon as regards the sole importance of "intrinsic factor." They think that, while entirely negative their experiments constitute no grounds for disbelief in Castle's fundamental "conditioned deficiency" concept of pernicious anemia. They believe that Greenspon, although possibly right in his conclusion that peptic digestion destroys "intrinsic factor," has not proved the rest of his hypothesis regarding the complete unimportance of Castle's "extrinsic" factor and "interaction product" mechanisms.

Effect of Aminopyrine on Blood Cells—Rawls says that his first two cases of agranulocytosis attributed to aminopyrine medication were observed in 1933. Since that time he has

observed two more cases in private practice and two others in consultation. He undertook the present study to determine (1) the frequency of the occurrence of agranulocytosis in patients treated with aminopyrine and (2) any change in the red and white blood cell counts, or polymorphonuclear counts of patients who were treated with aminopyrine but did not develop agranulocytosis. This was done in an effort to determine whether agranulocytosis might be due to drug idiosyncrasy or whether leukocytic changes occur with any regularity during the course of aminopyrine medication. The author states that during the past three years more than 100,000 tablets of aminopyrine or aminopyrine mixed with magnesium carbonate were administered to 400 patients in the clinic and in private practice. Of these, four (1 per cent) developed agranulocytosis and three of them died. Although this incidence is small, it is important because of the high mortality rate. The author further presents an analysis of the blood pictures of 100 cases (exclusive of those in which agranulocytosis developed). When this series is considered as a whole, the only change noted is a significant increase in the red blood cell counts. When, however, the groups are analyzed separately, there is a definitely significant increase in the red blood cell counts in males with rheumatoid arthritis, a significant increase in the white blood cell counts of the females with rheumatoid arthritis and a possible significant decrease in the polymorphonuclear counts in females with miscellaneous arthritis. It is interesting to note that the red blood cell counts are increased in all groups and that no definitely significant hematologic decrease occurred in any group. From this it might be maintained that agranulocytosis developing during the course of aminopyrine medication must be due to a hypersensitivity or idiosyncrasy.

American J. Obstetrics and Gynecology, St. Louis

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- Some Points in Treatment of Endometrial Hyperplasia by Progesterone Therapy. K. M. Wilson and C. A. Elden, Rochester, N. Y.—p. 194
- *Cervical Dilatation in Dry Labor and After Deliberate Early Rupture of Membranes. A. G. King, Cincinnati.—p. 201
- The Le Fort Colpocelestia. F. L. Adair and Laura DaSef, Chicago.—p. 218
- Acute Nephritis and Pregnancy. W. J. Dieckmann, Chicago.—p. 227
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- Heredity as Cause of Congenital Malformations. Madge Thurlow Macklin, London, Ont.—p. 258
- Intrathecal Injection of Solution of Alcohol for Intractable Pain in Pelvis and Lower Extremities. M. J. Meynier Jr., Houston, Texas.—p. 265
- Study of Action of Gonadotropic Substances Precipitated by Tannic Acid. C. A. Nau, Oklahoma City.—p. 272
- Use of Pituitrin Intravenously in Third Stage of Labor. J. B. Pastore, New York.—p. 280
- Operation to Correct Genital Prolapse Following Vaginal Panhysterectomy. L. Brady, Baltimore.—p. 295
- Cervicitis and Endocervicitis in Relation to Gynecologic Symptomatology. H. J. Holloway, Chicago.—p. 304
- Symptomatic Rupture of Graafian Follicle or Corpus Luteum. N. R. Kretzschmar, Ann Arbor, Mich. and R. E. Arnell, Chicago.—p. 308
- Early Chorionepithelioma Arising in Hydatidiform Mole. M. Garber and A. M. Young, Cleveland.—p. 321
- *Ergot in the Puerperium. C. T. Beecham, Philadelphia.—p. 330
- Recognition and Prevention of Bladder Injuries. S. S. Rosenfeld, New York.—p. 333
- Endometriosis of Umbilicus. H. F. Strongin, New York.—p. 336
- Granulosa Cell Carcinoma. C. B. Kelley and A. M. Gnassi, Jersey City, N. J.—p. 340

Cervical Dilatation in Dry Labor—How does the cervix open, and what is the role of the amniotic sac in labor, are questions that according to King have been disputed since the beginning of scientific obstetrics. He made investigations on 1,001 uncomplicated full-term parturitions occurring in 1,621 obstetric admissions. Of these, 40 per cent enjoyed intact membranes until complete dilatation and were used as controls. Thirty-one per cent spontaneously ruptured the membranes before the onset of regular pains at twenty-minute intervals and were classed as dry labors. The remaining 29 per cent was made up of those whose membranes were intact only to a dilatation of from 4 to 7 cm (11 per cent by spontaneous rupture and 18 per cent by deliberate rupture). No light was thrown on the etiology of rupture of the membranes, although it occurred disproportionately more often in primiparas. The occipitoposterior position was not a factor. The length of labor was studied from four points of view. There was a larger

percentage of prolonged labors in the control group than in the dry and partially dry groups. The cumulative distribution curves of percentage completed labors at two-hour intervals was most favorable for completely dry labors and least favorable for the "wet" labors, the partially dry labors falling between. In the partially dry labors there was a positive rather than a negative correlation between the length of the "wet" portion of the labor and the total length of labor. The statistically significant averages of the length of labor showed dry labor to be shorter than the controls by 20 (± 0.25) hours for primiparas and 24 (± 0.24) hours in multiparas. Concerning the safety of labor in the absence of the membranes, the author says that the incidence of forceps intervention was 16.3 per cent in the control group, 10.6 per cent in the dry labor group and 12.6 per cent in the partially dry labor group. The morbidity was essentially the same in all groups, i. e., 6.2 per cent in the controls, 5.5 per cent in the dry labor cases and 6.7 per cent in the partially dry labors. There was a slightly lower incidence of cervical lacerations in the dry labor group than in the controls, with the partially dry labors falling between. The fetal mortality was unaffected by rupture of the membranes. An exhaustive review of the literature disclosed that reports in the last fifteen years amply confirm the foregoing observations. These results offer support to the explanation of cervical dilatation suggested by Dewees, that in labor the cervix is gradually retracted over the head by muscular action alone. On the other hand, that dilatation is accomplished by the hydrostatic wedge, a theory which has been disputed repeatedly since the eighteenth century, appears to be incompatible with the results of this experiment, since the membranes proved to be unnecessary for a safe, easy and short labor.

Pelviccephalography.—According to Ball, the information obtained from the usual methods of roentgen pelvimetry and fetal cephalometry has been a disappointment to many obstetricians and radiologists. The reasons for this are probably numerous, but mainly it has likely been due to a failure to consider the third dimension. The relationship between the fetal cranium and the birth canal is best visualized by volumetric comparison. The problems in the mechanism of labor cannot be reduced to the simplicity of comparing a fetal skull diameter to a pelvic diameter. It is seldom possible by external means to obtain any definite idea of the mass volume of the fetal skull. Therefore a roentgenographic method that will measure the three dimensional size of the fetal skull and the birth canal should be of aid to the obstetrician. The author directs attention to his earlier description of such a method, which required only two exposures and does not require any measurements of the patient. All data are obtained from roentgenograms in the anteroposterior view with the patient in the supine position and in the lateral view with the patient in the lateral recumbent position. If preferred, the exposures may be made with the patient standing. Also, by one additional exposure in the anteroposterior view the films may be examined stereoscopically. The accuracy of the method has been within 5 per cent error for linear measurements and 10 per cent for volumetric estimations. All types of presentations are measurable and the examination may be done with accuracy from the thirtieth week of gestation. In breech presentations additional exposures are, of course, necessary to measure the fetal skull. The volume of the fetal cranial skull is determined by measuring the circumference of the film images. The magnification of the film image is corrected by a calculator, thereby eliminating any mathematical computation. To obtain measurements conveniently, a correction chart was mounted on a dial and the pointer geared to a calibrated contact wheel similar to a map measure. The fetal skull volume is compared to the volume capacity of two pelvic diameters, the true conjugate and the bi-ischial spine. Following the interpretation of volume ratio, the importance of the architecture of the pelvis in the mechanism of labor in marginal sizes only is discussed briefly. The frequency of occurrence of different type pelvis with presentation and position of the fetus near term or in labor in the native Southern white and Negro is tabulated. The absolute rate of increase in volume of the fetal cranium in utero as obtained from roentgenographic data is presented.

Ergot in the Puerperium.—In view of the divergent opinions on the importance of ergot, Beecham studied the morbidity, involution and puerperal bleeding in 551 postpartum

cases on three different ergot regimens in the Kensington Hospital for Women. Every patient received an ampule of solution of posterior pituitary and ergot at the completion of the second stage of labor. The first 100 patients received no oxytocic medication during their stay in the hospital. A series of 351 patients received fluidextract of ergot, U. S. P., starting when the patient was taken to her ward bed. Here she received 1 drachm (4 cc.) every four hours for six doses, and then three times a day for four days. In the third group of the series, 100 cases, a solution of ergonovine was administered in the same way as the fluidextract. It was found that lochia rubra was more persistent in patients receiving no form of ergot during the puerperium. Subinvolution occurred in much higher percentage (41.4 per cent) in nonergot cases than in fluidextract cases (13.2 per cent) and was completely absent in the ergonovine series. A satisfactory puerperium was observed in 85 per cent of patients receiving no oxytocic drug, in 87.8 per cent of patients receiving fluidextract of ergot U. S. P. and in 98 per cent of patients treated with ergonovine. There was less striking difference in the morbidity percentages in the three groups than in the figures showing degree of bleeding and subinvolution. Thus ergot appears to be a useful and necessary aid to a normal puerperium, preferably in the form of a preparation of known ergonovine content.

American Journal of Public Health, New York

26: 665-760 (July) 1936

- Vitamin D in Child Health F. O. Tonney Chicago—p. 665
- Effect of Relief Programs on Public Health Nursing in the State Preparation of Nurses Eva F. MacDougall, Indianapolis—p. 662
- Diagnosis of Infectious Mononucleosis in Public Health Laboratories C. A. Stuart and F. L. Mickle, Hartford, Conn.—p. 677
- Tabulating Machinery for Indexing and General Tabulation in Vital Statistics Office G. W. Bachne, New York, and H. L. Forsche Chicago—p. 681
- Effect of ERA Nursing Service on Volunteer and Official Agencies Ruth E. Mettinger Jacksonville Fla.—p. 686
- Tuberculosis Studies in Tennessee Clinic Study with Reference to Epidemiology Within Family H. C. Stewart, R. S. Goss and R. J. R. Puffer Nashville Tenn.—p. 689
- Trained Public Health Engineer in Public Health Departments C. G. Hyde Berkeley Calif.—p. 697
- Detection of Sheddors of Streptococci Responsible for Infectious Bovine Mastitis W. N. Plastryge and E. O. Anderson Storrs Conn.—p. 711
- Diphtheria Immunization W. E. Bunney, Lansing Mich.—p. 716
- Determination and Estimation of Residual Chlorine A. E. Griffe, Newark, N. J.—p. 719
- Problems in Rural Registration R. N. Whitfield Jackson Miss.—p. 725
- Treatment of Undulant Fever I. F. Huddleson H. W. Johnson and C. P. Bates East Lansing Mich.—p. 730
- Standardization and Application of Different Preparations of Diphtheria Toxoid Olga R. Povitzky, New York—p. 731

26: 761-864 (Aug) 1936

- Administrative Practice in the West J. R. Earp Santa Fe N. M.—p. 761
- Modern Trends in Nursing Education Annie W. Goodrich New Haven Conn.—p. 764
- Community Public Health Nursing in the Philippine Islands G. C. Dunham Washington D. C.—p. 771
- Lead Pipes as a Source of Lead in Drinking Water G. N. Quam and A. Klein Brooklyn—p. 778
- Integrated Control of Occupational Diseases C. O. Sappington, Chicago—p. 781
- Detailed Study on Diphtheria Immunization with One Dose of Precipitated Toxoid H. H. Pansung and E. R. Shaffer Columbus Ohio—p. 786
- Response to Rabies Vaccine Prophylaxis as Shown by Protection Test J. Reichel and J. E. Schneider Glenolden Pa.—p. 789
- Incidence and Behavior of Non Lactose Fermenting Bacteria from Normal Stools Ruth M. Kriebel Boston—p. 793
- Incidence and Significance of Beta Hemolytic Streptococci in Cultures from Selected Group of Milk Handlers F. M. Foote H. West D. Evelyn West and E. K. Borman New Haven and Hartford Conn.—p. 799
- Lumber Camp Inspections E. W. Campbell Augusta Maine—p. 808
- Immediate Allergic Response Following a Schick Test A. E. Fein and S. Harris Jr. Nashville Tenn.—p. 809
- Inhibitory Action of Colloidal Sulfur in Corpes Agar on Growth of Four Strains of Mycobacterium Tuberculosis-Hominis A. D. Vaidya and G. E. Snider Richmond Va.—p. 811
- *Significance of Small Variety Endamoeba Histolytica Bertha Spector Chicago—p. 813

Significance of Small Variety Endamoeba Histolytica.—According to Spector, *Endamoeba histolytica* is a species composed of distinct strains differentiated by the number of their cysts. Endamebas producing small cysts differ from

those producing large cysts physiologically, culturally, immunologically, clinically and in pathogenicity for lower animals. The trophozoites of *Endamoeba histolytica* producing small cysts are usually smaller and not so motile as those producing large cysts, and they do not ingest red blood cells. Bloody mucous stools in acute cases of amebic dysentery usually show quite large and very motile trophozoites, whereas the trophozoites found in soft stools in mild cases of amebic dysentery and carriers are usually smaller, approaching those giving rise to the small variety *Endamoeba histolytica* cysts. *Endamoeba histolytica* producing small variety cysts differs culturally from the *Endamoeba* producing large variety cysts. They grow infrequently (from 5 to 8 per cent) and with greater difficulty in Cleveland and Collier's medium, in which the large variety grows readily and luxuriantly. In the author's experience, cultures for *Endamoeba histolytica* from bloody mucous stools in active cases of amebic dysentery were positive in 100 per cent of the cases (forty-nine cases), but only about 95 per cent of the cultures of stools from carriers of the large variety *Endamoeba histolytica* were positive (thirty carriers). These figures are of clinical patients seeking medical care and are higher than those of food handlers, some of whom take amebicides before coming for examination in order to get a negative report. Arsenic was found in some of the stools that showed large variety *Endamoeba histolytica* cysts which failed to grow in culture. The cultures of the small variety *Endamoeba histolytica* must be subcultured every twenty-four to forty-eight hours, whereas those of the large variety need not be subcultured so frequently—every forty-eight to seventy-two hours is sufficient. *Endamoeba histolytica* producing small cysts differs immunologically from the *Endamoeba* producing large cysts. It fails to give positive complement fixation when the antigen prepared from the sediment of cultures of *Endamoeba histolytica* producing large cysts is used in tests with serum from patients infected with the small variety *Endamoeba histolytica*. There is a difference of opinion as to whether *Endamoeba histolytica* producing the small cysts is pathogenic. The symptoms are much milder than those caused by the large variety, yet they seem to be typical and are eliminated on specific treatment, especially if the symptoms are of short duration. Until more is known about these organisms, infected persons showing symptoms should be treated. In the author's experience, liver and lung abscesses have not been produced by the small variety *Endamoeba histolytica*. In none of her cases of amebic liver or lung abscesses was she able to find small cysts in the stools, whereas in every such case the large variety *Endamoeba histolytica* had been found. Experiments on the pathogenicity for lower animals are still in progress.

American Review of Tuberculosis, New York

3:4 179-300 (Aug.) 1936

- Pulmonary Tuberculosis and Diabetes Mellitus J J Wiener and J Kavee New York—p 179
Diabetes and Tuberculosis II Detailed Reports of This Combination of Diseases G B Myers and R M McKean Detroit—p 219
Insulin and Tuberculosis Partial Review of Literature and Bibliography F M Allen, New York—p 230
Insulin in Treatment of Tuberculosis F M Allen New York S A Douglass and E L Warren Paterson N J and W E Pottinger, Mountain Lakes N J—p 257
Use of Insulin in Tuberculosis Report of Thirteen Cases with Review of Literature. M A Spellberg and S H Rosenblum, Chicago—p 276
*High Carbohydrate Diets in Pulmonary Tuberculosis E B Freilich and G C Coe, Chicago—p 293

High Carbohydrate Diets in Pulmonary Tuberculosis

—In studying a series of thirty-five patients Freilich and Coe increased the regular diet of 1,600 calories by 800 calories in terms of Karo syrup and Dyno sugar (dextrose). Thirty-three of these thirty-five patients were definitely benefited by this procedure. Patients who had been gaining in weight before the experiment began had a greater weight increase during the experiment; patients who had been losing weight before the experiment began to gain in weight, stopped losing, or lost less than previously; those who maintained a stationary level before the experiment began gained weight during the experiment. Two of the thirty-five patients showed no change. Twenty-six of these patients lost weight in the month after the experiment, whereas six patients continued to gain, two went home, and one did not lose or gain. All the patients showed a high toler-

ance for the Karo syrup and the Dyno without any evidences of gastro-intestinal upsets. No glycosuria was present in any of these patients. The blood sugar was within normal ranges before and after the experiment. Karo syrup or Dyno, used alone or in combination, showed no difference in the results obtained. The authors feel that the extra carbohydrates were beneficial to the patients and form a necessary part of the dietary treatment of pulmonary tuberculosis.

Anatomical Record, Philadelphia

65 371-506 (July 25) 1936 Partial Index

- Site of Renal Elimination of Hemoglobin in Rabbit I Gersh Balti more—p 371
Cytologic Studies by Altmann Gersh Freezing Drying Method II Mechanism of Secretion of Hydrochloric Acid in Gastric Mucosa N L Hoerr with introduction by R R Bensley Chicago—p 417
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Relative Acidity of Histologic Fixing Fluids A. Petrunkevitch and Grace E. Pickford New Haven Conn—p 461
Effects of Prepuberal Gonadectomy on Adrenal Gland of Guinea Pig M Zalesky Chicago—p 467
Form and Structure of Endolymphatic and Associated Ducts in Child B J Anson and J G Wilson Chicago—p 485
*Simple Method for Preparation of Durable Anatomic Specimens F A Mettler and Cecilia C Mettler Augusta Ga—p 499

Simple Method for Preparation of Durable Anatomic Specimens—The Mettlers fix the specimen in solution of formaldehyde, wash it in water and dehydrate to 95 per cent alcohol, transfer it to benzyl alcohol until saturated, place it in saturated solution of Bakelite resin XR 6787 dissolved in 50 per cent benzyl alcohol and 50 per cent glycerin at 65 C, place it in an incubator at 50 to 60 C until the solution changes to a mushy white mass of a consistency resembling farina, remove the specimen from the mass, rinse it off with hot water, meanwhile brushing excess solid off with a moderately stiff brush, and allow it to dry. If the specimen is a gross cross section, the surface should be sandpapered smooth and the specimen coated with a layer of Bakelite resin XR 7403. When returned to the oven for forty-eight hours, a glasslike surface will result. After suggesting modifications for certain types of specimens, the authors stress that any of the specimens thus prepared can be stored without danger in drawers, hung on walls or put on shelves. They are not affected by dampness or warmth and are much more durable than composition models.

Annals of Internal Medicine, Lancaster, Pa.

10 147-282 (Aug.) 1936

- Present Status of Treatment of Pulmonary Tuberculosis L Brown Saranac Lake, N Y—p 147
Tuberculosis Among Student Nurses Five Year Study at Bellevue Hospital J B Amberson Jr and H M Riggins New York—p 156
*Diagnosis of Silicosis with Especial Reference to Roentgenologic Manifestations L U Gardner Saranac Lake N Y—p 166
Silicosis from Public Health and Economic Point of View A J Lanza New York—p 174
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Dextrocardia in Children H A Reisman Jamaica N Y—p 200
Lethal Effects of Solar Radiation on Guinea Pigs M Pinner Oneonta N Y and A E Margulis Tucson Ariz—p 214
*Occurrence of Macrocytic Anemia in Association with Lesions of Bowel H R Butt and C H Watkins Rochester Minn—p 222
Medico-dental Relations The Dentist's Point of View J T O'Rourke Louisville, Ky—p 233

Diagnosis of Silicosis—Gardner thinks that, regardless of the history of exposure to dust, a diagnosis of silicosis should not be made until generalized discrete nodular shadows are visible in the lung fields. Large localized shadows suggest complicating infection but there is a conglomerate type of simple silicosis that occurs in the absence of active infection. It may result from pulmonary damage by previous infection that has healed. It can be differentiated from active infection only by careful clinical study and by repeated roentgenograms to exclude change in the character and size of the lesion. The silicotic lung may exhibit the usual manifestations of tuberculosis, superimposed on a background of generalized nodulation, more common are the massive foci of consolidation due

to silicotuberculosis. These may be situated in the upper parts of the lung, where they result from reactivated apical foci of tuberculosis, but frequently they occur in the middle or lower part of the lung. They consist of a very chronic combination of tuberculosis and silicosis progressing simultaneously in the same area. They give rise to much less pronounced symptoms of intoxication than tuberculosis alone. More acute forms of tuberculosis, aspiration disease and miliary tuberculosis occur, but they are not very common. Nonsiliceous dusts are generally responsible for an exaggeration of the linear markings of the lung. As far as known, the slight perilymphatic reactions responsible for them do not interfere with pulmonary function and they do not alter the native susceptibility to tuberculosis. Asbestosis is not so well understood. The roentgenogram shows a diffuse haziness of the lower lung fields and later a very fine uniform stippling. Whether chronic pleurisy, increased linear markings and conglomerate shadows are due to the dust, to secondary changes incident to collapse of the lobules, or to complicating infection, has not been definitely settled. The appearance of a tuberculous lesion in the asbestosis lung is apparently not modified. There may be some tendency toward chronicity.

Macrocytic Anemia in Lesions of Bowel—Butt and Watkins point out that a variety of conditions are often accompanied by a morphologic blood picture resembling that of pernicious anemia. Conspicuous among these conditions are instances in which the intestinal tract is involved in some disease process. In seven cases of proved ileitis of the terminal portion of the ileum there were six instances of macrocytic anemia, and in the remaining case the anemia was of the microcytic hypochromic type. Apparently the macrocytosis was not dependent on the degree of involvement of the ileum because the extent of involvement of the ileum was as great in the case in which microcytosis occurred as it was in the remaining six cases. In the six cases in which macrocytic anemia was present, the erythrocytes were well filled with hemoglobin and closely simulated those found in cases of pernicious anemia. However, there was but little poikilocytosis as compared with the degree usually seen in pernicious anemia. Four patients who had an ulcer of the ileum also had hypochromic anemia. In one of these cases the anemia was of the macrocytic hypochromic type, in two cases it was of the normocytic hypochromic type, and in the remaining case it was of the microcytic hypochromic type. Commenting on their observations, the authors say that since the macrocytosis and anemia disappeared following operation in this series of cases it would not seem essential to treat such an anemia with materials effective in the treatment of pernicious anemia. It seems to them, however, that for good therapeutic results such preparations should be used and preferably by the parenteral method, as this should result in a rapid response of the blood to normal. The possible coexistence of pernicious anemia should be kept in mind and in cases in which the clinical observations support a diagnosis of pernicious anemia the treatment must be continued after operative procedures. The most common symptom in this series of cases was cramping abdominal pain. The authors wish to emphasize that this symptom, particularly in the presence of macrocytic anemia without symptoms of pernicious anemia, strongly suggests a lesion of the ileum.

Annals of Medical History, New York

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- Personalities of Oxford Medical School from 1700 to 1880 H. Rolleston, London, England—p. 277
John Hunter in Portugal (Two Letters Written by Him Recently Discovered) F. Beckman New York—p. 288
Unfamiliar Medical Works by Known and Anonymous Authors in Vatican Palatine Latin Mss. L. Thorndike New York—p. 297
William Alexander Greenhill M.D. (1814-1894) P. S. Codellas San Francisco—p. 306
Role of Vestibulars as Connecting Link Between Greek and Arabic Medicine A. O. Whipple New York—p. 313
Early Kentucky Medical Literature E. E. Hume Washington D. C.—p. 324
Making of Anatomies in Seventeenth Century England H. Silvette University Va.—p. 348
Niels Ryberg Finsen's Disease and His Self Instituted Treatment H. Roesler Philadelphia—p. 353
Helmholtz's Theory of Hearing Historical Note E. Fischer Richmond, Va.—p. 357
Elizabethan Conceptions of Physiology of Circulation I. I. Edgar Detroit—p. 359

Archives of Otolaryngology, Chicago

24: 127 270 (Aug.) 1936

- *Endolymphatic and Associated Ducts in Man. B. J. Anson and J. P. Nesselrod, Chicago—p. 127
Retrograde Sinus Thrombosis Complicating Primary Thrombosis of Jugular Vein F. E. Stone and M. D. Berger Brooklyn—p. 141
New Classification of Bones Forming Skull Based on Their Future and Embryologic Origin as Influencing Kind, Course and Frequency of Infections of Individual Bones with Surgical Applications, Especially as to Relation of Osseous Infections to Meningitis. W. P. Eagleton Newark, N. J.—p. 158
Readjustment of Equilibrium Following Unilateral Labyrinthectomy E. L. Ross and A. Olsen Chicago—p. 190

Endolymphatic and Associated Ducts in Man—Anson and Nesselrod show that, although numerous studies have dealt with the nervous portions of the membranous labyrinth, few have been concerned with the structure of the non nervous areas of the epithelial ducts. Two portions of the duct system have of late received attention, the slitlike communication of the endolymphatic duct with the utricle and the rugose wall of the endolymphatic duct itself. This study is concerned with the utricular and the endolymphatic duct in man, and particularly with the morphologic features of the ducts that can be studied advantageously with the aid of wax plate reconstructions. Several investigators have shown conclusively that the endolymphatic and related ducts in mammals are complex channels differing in many important respects from the conventional descriptions. The slitlike character of the utricular communication with the endolymphatic duct has been observed to be a striking feature of the duct system, this communication, as has been pointed out by others, is bounded on one aspect by a fold or "valve" (Bast), which anatomically at least is similar to other mechanisms in the body known to be valvular in function. The several dilatations of the endolymphatic duct are observed to be constant features, unlike the usual picture the endolymphatic duct is considerably enlarged to form a sinus like space medial to the utricular fold, as it proceeds distally within the vestibular aqueduct, the duct at first narrows and then expands into a second sinus-like space the walls of which are deeply plicate, these plicae are composed of epithelium over a substratum of loose, vascular connective tissue. The remaining part of the duct is marked by a decided narrowing and, next a distal swelling in the region commonly termed the endolymphatic sac, here the plications may be taller, but the underlying connective tissue is much less vascular than that in the region of the intermediate dilatation. In agreement with the interpretation of Guild, the authors believe that this system of folds answers the anatomic requirements of a resorptive mechanism for the endolymph. Suggestions are offered for a more descriptive terminology—seemingly needed to designate the specialized portions of the endolymphatic duct described in the recent literature.

Archives of Pathology, Chicago

22 139 292 (Aug.) 1936

- Osseous Metastasis of Carcinoma of Prostate with Especial Reference to Perineural Lymphatics S. Warren P. N. Harris and R. C. Graves Boston—p. 139
Nature of Experimental Cholesterol Arteriosclerosis in Rabbit G. L. Duff Toronto—p. 161
*Thrombosis of Aorta and Coronary Arteries with Especial Reference to Fibrinoid Lesions E. Clark, I. Graef and H. Chais New York—p. 183
Chronic Gastric Ulcer Following Bilateral Vagotomy in Rabbit and Dog J. M. Beazell and A. C. Ivy Chicago—p. 213

Thrombosis of Aorta and Coronary Arteries—Clark and his associates thought that in the study and evaluation of the 'fibrinoid' lesions in thrombosed arteries it would be of aid to examine the intimal plaques of atherosclerosis and syphilitic aortitis in nonthrombosed vessels, for in such plaques the earlier stages in the development of this lesion should be seen. The observations were compared with those made in a series of nine parietal aortic thrombi. They could find no evidence to support the view that the fibrin-staining material in the plaques of coronary arteries represents altered or necrotic fibrous tissue. As in the plaques of atherosclerotic and syphilitic aortas such fibrin staining masses either represent the remnants of an organizing surface deposit of fibrin or are due to the penetration into the plaque of blood elements.

Arkansas Medical Society Journal, Fort Smith

33:49-62 (Aug) 1936

- Rising Mortality in Appendicitis and What Are We to Do About It
J A Foltz Fort Smith—p 49
High Carbohydrate Diet in Treatment of Diabetes Mellitus B L
Moore El Dorado—p 51
Postpartum Atony of Uterus D K Kitchen, El Dorado—p 53

Canadian Medical Association Journal, Montreal

35:117-238 (Aug) 1936

- Internal Secretion as Factor in Origin of Cancer L Loeb E. L. Burns,
V Suintzeff and Marian Moskop St Louis—p 117
Observations on Action of Protamine and Insulin in Treatment of Dia-
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B Chown Winnipeg—p 134
Experiences in Leg Lengthening E C James Hamilton Ont—p 137
Ureteropelvic (Renal) Obstruction in Young E R Hall Vancouver,
B C—p 140
Moose River Mine Accident H K Macdonald and W D Rankin,
Halifax N S—p 143
Effects of Privation in Moose River Mine Disaster I Macdonald
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Recent Progress in Severe Diabetes. Priscilla White Boston—p 153
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*Alcohol and Glycerin in Treatment of Pyogenic Infections E. H
Wood Ottawa Ont—p 168
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*Autogenous Serum Treatment of Narcotic Addiction D M Black,
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Elementary Conception of Neuroses G N Paterson Smyth Montreal
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Effect of Repeated Injections of Histamine in Dog A On the Heart
and Blood Vessels G H Ettinger G E Hall and Jessie Lang
Toronto—p 184
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Alcohol and Glycerin in Treatment of Pyogenic Infections—Wood says that a report by McKim in 1927 drew his attention to the use of alcohol in dehydrating the tissues in infections of the hand and induced him to put the idea into practice, particularly in infections of the tendon sheaths. Glycerin seemed to be the logical agency through which to continue dehydration, lessen the possibility of the dressing adhering to the tissues and keep the wound free from contamination. After trying various percentages of glycerin from 100 per cent down, the diluent being rubbing alcohol, a combination of equal parts of glycerin and alcohol has been found the most satisfactory for general use. The general method of application of this treatment is as follows. In surface infections when only the skin and subcutaneous tissues are involved:
1 Incision is avoided until pus is localized and circumscribed
2 The area is cleansed with alcohol
3 A few layers of sterile gauze to cover all the edematous area completely are soaked in glycerin and rubbing alcohol, equal parts, and laid on the affected area. This is covered with a thin layer of absorbent cotton and lightly bandaged with an open-woven gauze bandage. An additional amount of glycerin and alcohol may then be poured over the area at once. No waterproof covering is used
4 In the case of a limb, it should be splinted or rested if a hand or arm it should be carried in a sling
5 The patient is given prescriptions for lotion 1, which is glycerin and alcohol equal parts, and for lotion 2, which is straight rubbing alcohol. Instructions are given to apply a small amount of lotion 2 every two to three hours, or more frequently in hot weather when evaporation is more rapid
6 The whole dressing is removed and replaced every twenty-four hours, early in the treatment, although an interval of two to three days may elapse without any particular loss to the effectiveness of the treatment
7 Careful instructions are given that the dressing must not be removed to make the applications and that no water be applied to the dressing. Should the dressing become moistened with water as frequently happens in hands, a larger quantity of lotion 2 should be immediately poured over the dressing. When the dressings are being changed, scrupulous care must be taken not to squeeze the inflamed area. As indicated by case reports, the author employed this treatment successfully in infected

lacerations, infected amputation of finger, carbuncle of the cheek, infected discharging sinus following operation, noma, infected traumatic bursitis, cellulitis and other conditions

Autogenous Serum Treatment of Narcotic Addiction—Black says that a new treatment for narcotic addiction has been gaining increasing popularity throughout the Orient during the past few years. The treatment was originated in Java by Dr Modinos and consists of the subcutaneous injection of autogenous serum taken from a blister raised with the aid of a cantharides plaster. It is based on the theory that there is an antidotal toxic substance in the serum of addicts. It has a remarkable effect in reducing the withdrawal symptoms and the craving for the drug in those addicted to opium, morphine and heroin. The author does not know whether it has been tried in cases of addiction to cocaine or other drugs. On admission the patient is given a physical examination, and his cooperation is solicited. An estimate is then made of the amount of narcotic he has been taking, and he is given enough tincture of opium by mouth on the first day nearly to equal his customary dose. A plaster is then prepared by taking a 4 inch square of adhesive plaster, to the center of which is applied enough emplastrum cantharidin B P to make a circle 1½ inches in diameter and about one-sixteenth inch thick. The skin of the upper abdomen is cleansed with alcohol and the plaster applied. The patient is warned to avoid breaking it, and it is left in place from eighteen to twenty-four hours. It causes some pain. When sufficient fluid has collected in the blister or, in any case, at the conclusion of twenty-four hours, the blister fluid is taken up in a syringe and injected subcutaneously. The amount of fluid obtained from a blister varies greatly. The author injected as much as 10 cc of blister fluid, but a dose as large as this sometimes causes some reaction and discomfort. Probably the optimal injection is about 5 or 6 cc., though even as little as 1 cc has an appreciable effect. The blister site heals in a few days without trouble. The author found a 5 per cent solution of tannic acid effective as a dressing. Another blister is applied the day after the injection, and further ones every second or third day as required. The author has not found it necessary to give more than four injections of blister fluid to any one patient. In the meantime tincture of opium is continued in rapidly decreasing doses, combined with tincture of belladonna and tincture of nux vomica. Phenobarbital or pentobarbital sodium is given to assist in obtaining sleep. The bowels are kept open with compound cathartic pills, three or four of which are needed in a dose at the outset of treatment. In every case the injections were followed in a few hours by a lessening of discomfort and a decrease in the craving for the drug. Some of the patients refused opium after their second injection.

Delaware State Medical Journal, Wilmington

8 163-182 (Aug) 1936

- Delaware and the United States Registration Area A C Jost, Dover—p 163
Ten Year Summary of Discharged Cases from the Brandywine Sanatorium L. D Phillips Marshallton—p 167
Maternal and Child Health Program Aims to Augment Private Practice W E Morris Dover—p 168
Syphilis Control in Delaware J R Beck Dover—p 171
Child Defects and the Physician F I Hudson Rehoboth—p 173
Relation of the County Health Unit to the School Health Program E F Smith Dover—p 174
What the Public Works Program Has Meant to Delaware R C Beckett Dover—p 175
Laboratory Comments R D Herdman Dover—p 177
Objectives of Public Health Nursing Kathryn Trent Dover—p 178

Georgia Medical Association Journal, Atlanta

25 265-308 (Aug) 1936

- Yardstick to Measure Artificial Feedings for Infants W A Mulhern Augusta—p 265
The Present Day Practice of Rhinology Some Comments Based on Forty Two Years of Experience D Roy Atlanta—p 271
Primary Bronchial Cancer and Difficulty in Early Diagnosis Case Report S R Roberts Atlanta and J D Gray Augusta—p 275
Uretero-Intestinal Anastomosis G W Wright Augusta—p 279
Public Health Problems in Georgia T F Abercrombie Atlanta—p 283
Presentation of the Badge of Service to the President James E. Paullin F P Calhoun Atlanta—p 292
Acceptance of the "Badge of Service" by the President, J E. Paullin Atlanta—p 294

Illinois Medical Journal, Chicago

70 105 204 (Aug) 1936

- Critical Review of 822 Operations on Adrenal Sympathetic System with Especial Reference to Essential Hypertension G W Crile Cleveland —p 115
- Tuberculosis of Kidney in Childhood and Adolescence. H L Kretschmer Chicago —p 119
- Low Dosage Irradiation of Pituitary and Adrenals for Treatment of Nonnephritic Hypertension. J H Hutton and E E Madden Chicago —p 125
- New Electric Stethoscope and Stethograph (Phonocardiograph) Preliminary Report J K Narat Chicago —p 131
- Various Anesthetic Agents Especially Some Newer Preparations J S Lundy Rochester Minn —p 134
- Our Lay Anesthetist Problem L F Anderson Buffalo —p 140
- Present Concept of Endamoeba Histolytica Infestation A C Tenney Chicago —p 145
- Amoeba Histolytica Masking Essential Pathology E F Traut Chicago —p 148
- Surgery of Retinal Detachment S J Meyer Chicago —p 149
- Treatment of Ophthalmia Neonatorum J G Bellows Chicago —p 154
- Early Manifestations of Mental Disorders S N Clark Jacksonville. —p 157
- Intraperitoneal and Visceral Temperature Values as Influenced by External Environment. B R Selden Sterling —p 159
- *Raw Apple Treatment of Diarrhea in Pediatric Practice M P Borovsky Chicago —p 174
- Syphilitic Aortitis Pathology Diagnosis and Therapy A Arkin Chicago —p 178
- *Cardiac Emboli M P Gethner Chicago —p 185
- Pulmonary Tuberemia Report of Case with Necropsy R. B. Lewy Chicago —p 192
- Etiologic Relationship of Aminopyrine to Agranulocytosis F Stenn Chicago —p 193
- Black Widow Spider Poisoning Report of Four Cases D J Louis Chicago —p 195
- Results in Operation for Ingrown Toenail A M Winograd Chicago —p 197
- Side Reactions Encountered in Use of Estrogenic Hormone Therapy S A. Ziemann Chicago —p 198

Raw Apple Treatment of Diarrhea in Pediatric Practice—Borovsky emphasizes that the raw apple diet as a treatment for diarrhea in infants and young children deserves much more attention than it has heretofore received in this country. He reports twenty-three cases of enteral and parenteral diarrhea with uniformly good results within fourteen to forty-eight hours after the institution of this treatment. The youngest patient was 15 days old and the smallest weighed 4 pounds 12 ounces (2,155 Gm). The acute diarrheas are the quickest to respond with firm stools. This diet must exclude all other foods except weak tea or water. This treatment has a definite place in the management of diarrhea cases especially when medication is refused or is difficult to administer. The beneficial effects of the raw apple in these cases is probably due to the adsorptive power of the apple pulp, the malic acid, the pectins and possibly the tannates. No other single therapeutic measure has so simply and uniformly corrected such diarrheas as are here reported.

Cardiac Emboli—Gethner shows that embolism will produce symptoms which simulate various other diseases, the real condition often being overlooked. He thinks that the possibility of embolism should always be suspected in the presence of heart disease, especially when there is an associated auricular fibrillation, when there was a recent operation in the presence of phlebitis, puerperal sepsis or following quinidine medication. In discussing the use of drugs in emboli, he takes up the action of digitalis and quinidine. He lists the following as the contraindications to the use of quinidine: 1 Cases in which there is congestive and distressing heart failure. 2 Badly damaged hearts—myocardial degeneration and arteriosclerosis. 3 History of previous embolism. 4 Active acute or subacute bacterial endocarditis. 5 Fever. 6 Multiple valve lesions. 7 Disordered conduction such as partial or complete heart block. 8 Fibrillation of long standing. 9 Coronary diseases of the heart. 10 If the patient has not had a previous course of digitalis. 11 In combination with digitalis. 12. If the patient is not confined in a hospital where the action of the drug can be watched. 13 After one course of quinidine that did not succeed in restoring normal rhythm. The indications for the use of quinidine are but few. It may be tried in paroxysmal auricular tachycardia to prevent the recurrence of an attack. The dose should be fractional. It may be used also for symptomatic relief in auricular fibrillation provided none of the factors enumerated under contraindications are present. Auricular

flutter preceding the normal rhythm may be the real cause of embolus formation. It is best not to try to cure the patient of auricular fibrillation by employing drugs, especially when the condition is of long standing.

Indiana State Medical Assn. Journal, Indianapolis

29: 363-408 (Aug) 1936

- Relationship of Preliminary Medication to Anesthesia J S Lundy Rochester Minn —p 363
- Use of Continuous Suction in Surgical Treatment New Apparatus Suction Siphonage F B Ramsey W D Little and J E Pister Indianapolis —p 365
- Craniofacial Monster J B Rogers Michigan City —p 368
- Pericarditis in Uremia A B Richter Flora —p 369
- Advice to Interns Entering Practice E D Clark, Indianapolis —p 373
- Bio-Assay of Fibro-Adenoma of Breast for Estrogenic Substance. M V Kahler Indianapolis —p 374
- Leukorrhea H D Tripp Logansport —p 376
- Water Metabolism R A Solomon Indianapolis —p 379

Journal of Comparative Neurology, Philadelphia

64 187 364 (Aug 15) 1936

- Electrical Stimulation of Points in Forebrain and Midbrain Resultant Alterations in Respiration H Kabat Chicago —p 187
- Purring Center in the Cat's Brain E L Gibbs and F A Gibbs Boston —p 209
- Development of Finer Structure and Fiber Connections of Cerebellar Corpus of Luys and Substantia Nigra in the Pig R F Shaner Edmonton Alta —p 213
- Acusticolateral Nervous System in Fishes A A Pearson Chicago —p 235
- Cerebellum and Corpus Pontobulbare of the Bat (Myotis) O Larnell Portland Ore —p 275
- Some Determinations of Ratio of Nerve Fibers to Nerve Cells in Thoracic Dorsal Roots and Ganglions of Cat D Duncan and L L Keyser Galveston Texas —p 303
- Lamination of Medial Lemniscus in Macacus Rhesus A. Ferraro and S E. Barrera New York —p 313
- Relation of Nerves to Degenerating Taste Buds T W Torrey, Bloomington Ind —p 325
- Hereditary Defects of Corpus Callosum in Mouse Mus Musculus L S. King Boston —p 337

Journal of Nervous and Mental Disease, New York

84 125 248 (Aug) 1936

- Relationship of Intellect to Speech Defect in Aphasic Patients F Kennedy and A Wolf New York —p 125
- Encephalomalacia with Marked Reactive Gliosis of Entire Hemisphere K A Menninger Topeka Kan —p 146
- *Fat Feeding in Schizophrenia A T Brice Jr Palo Alto Calif —p 157
- Cortical Innervation of Respiratory Movements I Slowing of Respiratory Movements by Cerebral Stimulation. P C Bucy and T J Case Chicago —p 156
- Etiology of Subdural Hematoma Anatomic and Pathologic Study J A Hannah Toronto —p 169
- Total Hemiatrophy and Cerebellar Tumor R H Kampmeier, New Orleans —p 187

Fat Feeding in Schizophrenia—Brice says that the rationale of raising the level of the blood fats in schizophrenia has been fairly definitely established. He mentions the observations of Mott, Stenberg and Duncan and points out that he himself found that in schizophrenia there is a real depression of level of the blood cholesterol, unsaturated and total fatty acids and glutathione below the norm, and that statistically a greater significance attaches to the depression of glutathione and of the fatty acids than to that of the cholesterol. He also adduced evidence supporting the conclusion that the correlation between emotional phenomena and the level of the blood unsaturated fats is closer than that existing between the emotional state and the level of the total blood fats or blood cholesterol. With such considerations and the generally recognized fact that schizophrenic patients are emotionally flat as a background, an effort has been made to elevate the level of the blood fats in a schizophrenic group through an increase of fats in the diet. The group of eleven patients selected consisted of three extremely stuporous and apathetic catatonic patients, three stuporous apathetic patients carrying hebephrenic diagnosis, four actively hallucinated hebephrenic patients and one actively delusional paranoid patient. The diet was based on the observation of Man and Gildea that a balanced meal containing at least 0.6 Gm of fat per kilogram of body weight and with carbohydrates and proteins slightly exceeding the weight of fats could be ingested by normal men and women without causing discomfort or nausea. The increase of fats was given in the

form of additional butter, cream, milk eggs, meat fat and vegetable fats in the salad dressing. The diet was built up progressively. The final twenty-four hour diet thus attained consisted of protein 72 Gm, carbohydrate 130 Gm and fat 78 Gm. The total calories of this diet averaged approximately 2,400. Specimens of blood for determination of serum cholesterol, iodine absorption, total fatty acids and blood glutathione were taken before breakfast at least once each month from each patient. When after four months of fat feeding no appreciable elevation of the blood chemistry had been effected castor oil in one ounce daily dosage was added to the diet and several weeks subsequently acidophilus milk in liberal quantities as suggested by Ingram. No ketosis was produced by this diet. No elevation of the blood chemistry level was effected. No marked changes in weight of any of the patients occurred. No significant mental or emotional change in any of the patients was recorded. During the seventh month of fat feeding, specimens of feces were obtained from each patient and the total lipins were estimated. The figures so obtained were compared to those of an exactly similar series from the same number of general medical and surgical patients on ordinary hospital diet and showed that the schizophrenic patients were eliminating almost exactly twice the amount of the fecal fat of the general medical and surgical patients that is to say, schizophrenic patients on a 178 Gm fat diet had a fecal fat content of 84 per cent, while general medical and surgical patients on a 122 Gm fat diet had a fecal fat content of 42 per cent. It will be noted that proportionately to the dietary intake the excretion of fecal fat by the schizophrenic group should have been but 61 per cent instead of 84 per cent as found. This observation is considered evidence suggestive of anabolic hypofunction in schizophrenia.

Journal of Nutrition, Philadelphia

12 113 222 (Aug 10) 1936

- Specific Dynamic Action of Glycine Intravenously Administered to Nephrectomized Dogs. A G Eaton S C Cordill and J L Gouaux New Orleans—p 113
- Phosphorus Deficiency Metabolism and Food Utilization in Beef Heifers M Kleiber H Goss and H R Guilbert Davis Calif—p 121
- Activity of Yeast Extract in Prevention of Renal Hypertrophy Caused by High Protein Diets. B B Longwell R P Johnston and R M Hill Denver—p 155
- Study of Fecal Flora and Line Test of Normal Rats Rachitic Rats and Healing Rachitic Rats. Helen Friedman New York—p 165
- Studies on Blood and Tissues in Nutritional Muscular Dystrophy. S Morgulis and H C Spencer Omaha—p 173
- Metabolism Studies in Nutritional Muscular Dystrophy. S Morgulis and H C Spencer Omaha—p 191
- Effect of Selenium Containing Foodstuffs on Growth and Reproduction of Rats at Various Ages. K W Franke and V R Potter Brookings S D—p 205
- Effect of Administration of Sodium Bicarbonate and of Ammonium Chloride on Amount of Ascorbic Acid Found in Urine. Estelle E Hawley J P Frazer L L Button and D J Stephens Rochester N Y—p 215

New England Journal of Medicine, Boston

215 265 314 (Aug 13) 1936

- The Massachusetts Cancer Program. H D Chadwick and H L Lombard Boston—p 265
- Convalescent Care in Chronic Arthritis. J G Kuhns and R J Joplin Boston—p 268
- *Vertical Fracture Through Lower Tibial Epiphysis During Period of Bone Growth and Operation for Correction of Resultant Deformity. Report of Case. R H Morris and F H Downing Boston—p 272
- Dehydration Therapy in Toxemias of Pregnancy. Report of Sixty Five Cases. G E May Boston—p 277
- The Problem of Eye Injuries. Constance G Hartwell West Newton Mass and W D Rowland Boston—p 290
- Fracture Through Tibial Epiphysis During Period of Growth—According to Morris and Downing vertical fractures through the lower tibial epiphysis sustained during the period of bone growth are comparatively rare. This type of fracture is an entity comparable to Pott's or Colles' fracture. The mechanism of its production is always the same and the resultant deformity varies only in degree in each individual fracture. The authors show that the slowly developing deformity is due to the arrested growth of the medial portion of the tibia, resulting from destruction of epiphyseal plate cells. In describing the history of a boy, aged 8, the authors show that the initial treatment of this type of fracture is careful manipulation and

immobilization. Repeated violent manipulations or open reduction for the purpose of procuring exact replacement of the fragments is contraindicated because by so doing there may be further destruction of the epiphyseal plate cells. The indications for operative measures to correct this deformity before the completion of bone growth are (a) instability of the ankle or knee or (b) an increase in the severity of the secondary deformities of the knee and spine. They describe an operation that corrects the deformity and maintains the normal length of the leg. The lower third of the right tibia is exposed by an incision $4\frac{1}{2}$ inches long, parallel and lateral to the crest of the tibia. The periosteum is incised in the line of the skin incision and separated by blunt dissection from around the tibia. About 1 inch above the lower epiphyseal line of the tibia the periosteum and interosseous membrane are divided horizontally. A step osteotomy is done on the tibia, leaving 3 inches between the steps and the lower step about $1\frac{1}{2}$ inches above the lower epiphyseal line. A simple osteotomy of the right fibula is done through an incision $1\frac{1}{2}$ inches long over the outer side of the leg. The upper and medial corner of the lower fragment is removed to prevent too great pressure on the soft tissues of the leg when the foot is put into a corrected position. With a hand drill three No 30 hardened steel pins are inserted—one through the os calcis and the other two through the upper fragment of the tibia just above the line of incision. The two upper pins are parallel to each other and at right angles to the long axis of the tibia. The lower pin is at right angles to the vertical plane of the os calcis. The periosteal tube cannot be sutured over the bone. The wound is closed with interrupted plain catgut for the subcutaneous tissue and black silk for the skin suture. The three pins are fitted with a leg lengthening apparatus, which is set to hold the foot in a corrected position under slight tension.

New Jersey Medical Society Journal, Trenton

33 441-492 (Aug) 1936

- Notes on History of Medical Practice in Camden County. H B Decker Camden—p 447
- The Newer Trends in Surgery. D B Allman Atlantic City—p 451
- Children and Tuberculosis Programs. W L Weintraub Paterson—p 454
- Tuberculosis in Childhood and the Teen Age. B Gordon Philadelphia—p 456
- Mechanism of Committing Mental Patients to State Hospitals in New Jersey. J B Gordon Marlboro—p 459
- Beriberi in New Jersey. Report of Case. G M Levitas Westwood—p 462
- Staphylococcal Meningitis Treated with Autogenous Bacteriophage. D E Frank Belleville—p 466
- After All the Patient Is Human. C F Becker Camden—p 471
- Case of Cold Allergy with Spontaneous Recovery. M Ehrlich Eliza Beth—p 477
- Rocky Mountain Spotted Fever. Report of Case. H C Goldberg Perth Amboy—p 478
- Maternal Welfare. Article Number Seven. The Intern's Education in Obstetrics. W K Pudney Montclair—p 479

New York State Journal of Medicine, New York

36 1075 1114 (Aug 1) 1936

- Relations of Acid Base Equilibrium to Pathogenesis and Treatment of Whooping Cough. J C Regan Brooklyn and A Tolstouhov New York—p 1075
- Circulatory Efficiency. Surgery Digitalis and Death. C W Crampton New York—p 1087
- *Retention of Lipiodol in Fallopian Tubes with Especial Reference to Occlusive Effect in Cases of Permeable Strictures. I C Rubin New York—p 1089
- Nonhealing of Mastoid Wounds. Causes and Remedies. R Almour New York—p 1097
- Pathology of Mental Disorders. N D C Lewis New York—p 1101
- Irradiation in Thyrotoxicosis. J T Stevens New York—p 1109
- Cancer of Esophagus Penetrating into Right Bronchus. Case Report. W L Watson New York—p 1111
- Between Mental Health and Mental Disease. B Liber New York—p 1113

Retention of Iodized Oil in Fallopian Tubes—Rubin points out that, if the tubes were closed before iodized oil was injected into them they remain closed and the patient suffers no appreciable loss of her chances for conception. If the tubes are perfectly normal before the iodized oil injection, the chances are that they will remain patent, as peristalsis may be relied on to expel the oil into the peritoneal cavity or into the vagina.

When the tubes are constricted intrinsically or extrinsically by agglutinations of their mucosa or serosa the oil can be retained and serves to complete the blockade. The oil is retained in the tubes because of two factors (1) impaired tubal function and (2) the viscosity of the iodized oil. In the presence of a stricture, peristalsis is as a rule reduced and hence is inadequate spontaneously to force the iodized oil through the tight point. It has been demonstrated that greater force is necessary to inject iodized oil through the same tube than water or gas, and this is especially true when the lumen is strictured. The pressure required for the gas to pass such a narrow lumen is frequently as high as 160 or 200 mm of mercury when carbon dioxide is employed and greater when iodized oil is used. The force of tubal contractions can be measured in millimeters of mercury. The contractions range at the maximum between 50 and 60 mm of mercury. Assuming that vigorous antiperistaltic contractions may reach a pressure of 100 mm of mercury, they would not be strong enough to force all the retained oil through the stricture. The author describes cases in which he observed iodized oil retention. These cases and several others in which infection followed iodized oil injection caused him to proceed very cautiously with its use, limiting it to the occasional patient in whom an operation was considered. However, without exhibiting frankly inflammatory signs and symptoms, the retention of iodized oil may induce a local irritation and foreign body reaction which has a definitely deleterious effect in partially strictured tubes leading to permanent occlusion. This is illustrated with case histories. The pathologic conditions found were inspissation, foreign body giant cell infiltration, and closure of the lumen. This lesion is almost identical with the lesion produced by gonorrhea and tuberculosis, from which it must be differentiated. The result is sterility. The author reaches the conclusion that, until a radiopaque substance shall be available having the proper viscosity and density to demonstrate permeable tubal strictures and possessing that degree of resorption which leaves no residue within the tubal lumen after a few hours, thus preventing foreign body reaction, it would be well in instances of sterility to stop using iodized poppy-seed oil and other iodized oils whose chemical composition is more or less the same.

Northwest Medicine, Seattle

35: 285 324 (Aug.) 1936

- Principles of Diagnosis in Digestive Field T R Brown Baltimore—p 285
Upper Abdominal Adhesions O F Lamson Seattle—p 293
Orthostatic Hypotension Report of Six Cases and Review of Literature E M Chew E V Allen and N W Barker Rochester Minn.—p 297
Wounds and Their Repair J A Wolfer Chicago—p 303
New Respiratory Apparatus C A Ewald Seattle—p 311
Epidemic Dysentery in the Yakima Valley H H Skinner Yakima Wash.—p 313

Oklahoma State Medical Assn. Journal, McAlester

29 273 308 (Aug.) 1936

- *Esophageal Diverticula R M Howard Oklahoma City—p 273
Medical Aspects of Gallbladder Problem J F Daly Pawhuska—p 278
Combined Nonspecific Ulcerative Colitis and Ileitis V H Musick Oklahoma City—p 280
Epidemic Cerebrospinal Meningitis R H Lindsey G L Johnson and W P Greening Pauls Valley—p 283
Care of the Premature Infant A L Salomon Oklahoma City—p 286
Nervous and Mental Problems in Obstetrics J Feild Enid—p 289

Esophageal Diverticula—Following a review of the earlier literature on esophageal diverticula Howard discusses the etiology, symptomatology, diagnosis and treatment of this condition. He then gives brief histories of seven cases, which came under his observation in the last two years. The patients were from 65 to 78 years of age the average age being 72.3 years. Symptoms were present for from four months in one case to twelve years in another. The average time symptoms were present was 4.33 years. The five patients operated on made uneventful recovery without complications and were entirely relieved of the distressing condition. The author thinks that esophageal diverticula are probably more common than ordinarily thought and that dissemination of knowledge concerning the typical symptom will result in more cases being diagnosed. The two stage operation has proved entirely satisfactory in his hands.

Public Health Reports, Washington, D C

51 989 1026 (July 24) 1936

- Sickness Among Male Industrial Employees During First Quarter of 1936 K Brundage—p 989
Communicable Diseases and Activities for Their Control in Brunswick Area J O Dean and E H Pennell—p 991

51: 1027 1068 (July 31) 1936

- History of Leprosy in Louisiana O E Denney—p 1029
Oxidation of Sewage by Activated Sludge P D McNamee—p 1034

51 1069 1104 (Aug 7) 1936

- *Encephalitis Virus (St Louis Type) Effect of Partial Spec Immunity on Clinicopathologic Picture in Intracerebrally Inoculated White Mice C Armstrong and R D Lillie—p 1069
Primary Pneumonias of Infants and Children J G M Bullock and Evelyn Greenbaum—p 1076
Mortality from Automobile Accidents Among Children in Different Geographic Regions of the United States 1930 Studies on Fatal Accidents of Childhood Number One W M Gafsafer—p 1083

51 1105 1144 (Aug 14) 1936

- Prevention of Intranasally Inoculated Encephalitis (St Louis Type) in Mice and of Poliomyelitis in Monkeys by Means of Chemicals Instilled into Nostrils C Armstrong and W T Harrison—p 1105

51 1145 1182 (Aug 21) 1936

- Estimate of Monetary Value to Industry of Plant Medical and Safety Services D K Brundage—p 1145

Encephalitis Virus—Armstrong and Lillie found that normal mice, when intracerebrally inoculated with the St. Louis type of encephalitis virus, usually developed a clinicopathologic picture pointing predominantly to a brain localization. Partially immune mice, when intracerebrally reinoculated after a suitable interval, with a proper dose of virus, tended to develop symptoms and disturbances pointing predominantly toward a cord localization. The pathology is that of a destructive inflammation of the gray substance. The authors failed to produce the predominantly myelitic symptoms when the second inoculation was made by the intranasal route. The paralysis may be permanent or undergo variable to apparently complete recovery. These observations are probably best explained by assuming that cord cells of mice are relatively more susceptible to the virus of encephalitis than are the brain cells and therefore require a higher degree of immunity to afford protection when once the cord is reached by the virus. The possibility of a difference in response by brain and cord cells to active immunization cannot however, be ruled out.

Radiology, Syracuse, N Y

27 131 260 (Aug.) 1936

- Unusual Periorbitis in Children C B Rose Chicago—p 131
What Kind of Tube Did Röntgen Use When He Discovered the X Ray? O Glasser Cleveland—p 138
Dilatation of Pulmonary Artery of Congenital Origin L A Smith W P Moenning and G S Bond Indianapolis—p 141
Use of Geiger Muller Counters for Locating Radium and for Measuring Gamma Ray Intensities G L Locher Swarthmore Pa and J L Weatherwax, Philadelphia—p 149
*Management of Cervical Metastatic Epidermoid Carcinoma W Clarkson and A Barker Petersburg Va—p 158
*Treatment of Benign Uterine Hemorrhage by Irradiation J J Quirey Easton Pa—p 165
Planeography Localization and Mensuration Standard Depth Camera J Kaufman Brooklyn—p 168
Effect of X Rays on Fine Structure of Parenchyma of Thyroid Gland (Second Article) B S Zimmit ky A Bakina and A P Devits Sverdlovsk U S S R—p 175
Fractures of Spine Report of 173 Cases R G Giles Temple Texas—p 182
Some Physical Problems of High Voltage X Ray Therapy F H Exner New York—p 186
Biologic Roentgen. C Packard New York—p 191
Rate of Recovery of Human Skin from Effects of Hard or Soft Roentgen Rays or Gamma Rays W S MacComb and Edith H Quinn New York—p 196
Further Development in Supervoltage Therapy Apparatus T Lee and K E Corrigan Detroit—p 208
Heredity and Radiation M Demerec Cold Spring Harbor N Y—p 217
Mitosis During Healing of X Ray Burns J A Cameron Cincinnati—p 230

Management of Cervical Metastatic Epidermoid Carcinoma—Clarkson and Barker demonstrate that the high mortality rate from carcinomas of the upper mucous membranes is largely the result of a lack of proper treatment of the areas of lymph drainage by many physicians who attempt

to treat the primary lesions. Preoperative irradiation should always precede biopsy and all other forceful manipulations of the primary lesion. The possession of a thorough knowledge of the various methods of treatment, of adequate knowledge of tumor pathology and of sufficient courage to be scientifically radical are absolutely essential when treating cancer. Careful attention must be paid to the lethal dose of radiation for the various types of neoplasms, and, whenever indicated, the irradiation must be carried to the limits of tissue tolerance. The radiosensitivity of an epidermoid carcinoma increases in direct proportion to the amount of anaplasia, and this rule probably holds true of all neoplasms when considered separately within their own histologic classification. Therefore, sections should be taken from various parts of the primary growth to insure accurate grading and the direction of treatment accordingly. Prophylaxis is left to external irradiation alone. All patients with metastatic nodes are treated principally by a combination of external and interstitial irradiation. The operable nodes that may then remain are removed by means of an endotherm. Radical surgery is resorted to only in operable cases of melanomas and grade 1 carcinomas with extensive metastases. In cases of infection, small daily doses (100 roentgens) of external radiation should be given first for about ten days, pus collections should be evacuated with an endotherm and, in cases in which implantation therapy is used, removable seeds are advised because the strings facilitate drainage. Insulin and vitamin concentrates will improve the appetite and general condition of cancer patients, but no one can be certain at the present state of our knowledge that malignant cells are not likewise stimulated. Therefore, for the present it may be well to confine their use to diabetic patients and to nondiabetic patients in a state of extreme inanition.

Treatment of Benign Uterine Hemorrhage by Irradiation—So far as Quinney's own experience is concerned, the use of external irradiation by means of roentgen rays is entirely satisfactory in the treatment of benign uterine hemorrhages, so that he now rarely uses radium, thereby avoiding the surgical procedure necessary for its intra-uterine application. He shows that irradiation is undoubtedly the treatment of choice in cases of menorrhagia of the menopause associated with fibromyoma. It yields extremely satisfactory results in cases in which the fibromyoma does not exceed in size a four months pregnancy and in cases of a fibrous uterus in which the possibility of malignancy has been eliminated by the history or by a curettage. In cases of hemorrhage at or near the menopause it is considered proper by many radiotherapists to irradiate as for malignancy. Every attempt should be made however, to eliminate malignancy by a bimanual and visual examination of the cervix. In treating uterine fibromyoma it is immaterial whether the tumor is submucous, interstitial or subserous. A pedunculated fibromyoma is not considered suitable for treatment. A degenerating or strangulated fibromyoma should be removed by surgical procedure, unless there are very definite contraindications to an operative procedure. Fibromyomas of such dimensions that they extend above the umbilicus, or those causing pressure effects, should also be removed surgically. Pelvic infections are a definite contraindication to the use of radium, but this statement does not so strictly apply to the use of the roentgen ray. It has been the author's custom to treat through four 15 by 15 cm areas two anteriorly and two posteriorly, the central beam being directed to the uterus and ovaries. The method employed is that advocated by Weatherwax using 200 kilovolts, 5 milliamperes, 0.5 mm of copper with 1 mm of aluminum, and 650 roentgens in the center of the pelvis. At each sitting, 200 roentgens is given over each area the loss of each interval being made up until the desired number of roentgens has been delivered to the uterus and ovaries. In establishing a premature menopause in the manner described, it should be stated that the patient does not escape the symptoms which usually accompany this change.

Rhode Island Medical Journal, Providence

10:113 130 (Aug.) 1936

- Colics Following Cholecystectomy. Probable Mechanism of Their Production. A. M. Snell, J. M. McGowan and W. L. Butsch. Rochester, Minn.—p. 113
- Observations from the Heart Clinic of the Rhode Island Hospital. C. C. Dustin. Providence.—p. 119

Southern Medical Journal, Birmingham, Ala

29:775 882 (Aug.) 1936 Partial Index

- Objectives of Medical Education. D. Lewis. Baltimore.—p. 775
- Functional Point of View in Medical Sciences. G. T. Caldwell. Dallas, Texas.—p. 779
- Present Status of Psychiatry in Medical Education. F. G. Ebaugh. Denver.—p. 784
- Diagnosis and Management of Gonococcal Arthritis with Emphasis on Use of Ammonium O Iodoxybenzoate. J. F. Hamilton. Memphis, Tenn.—p. 791
- Treatment of Irritable Colon. J. S. Levy. Little Rock, Ark.—p. 800
- Hypertension. I. W. Cooper and L. Hart. Meridian, Miss.—p. 806
- Erythematous Lupus. Lichen Planus and Psoriasis. Pathologic Trilogy with Especial Reference to Treatment of Lichen Planus with Pituitrin. J. N. Roussel. New Orleans.—p. 811
- Brain Tumors in Children. J. G. Lyerly. Jacksonville, Fla.—p. 819
- Treatment of Acutely Perforated Duodenal Ulcer by Excision with Pyloroplasty. Report of Fourteen Cases Treated by This Method. J. M. Donald. Birmingham, Ala.—p. 827
- Open Treatment of Peritonitis Secondary to Appendicitis. H. A. Gamble. Greenville, Miss.—p. 834
- Total versus Subtotal Hysterectomy. F. Hagaman. Jackson, Miss.—p. 838
- Logical Eclamptic Therapy Evolved After Nineteen Years Study in 232 Cases. J. R. Reinberger and P. B. Russell, Jr. Memphis, Tenn.—p. 841
- Recent Research on Malaria Plasmodia. H. E. Meloney. Nashville, Tenn.—p. 852
- Some Preliminary Observations on Airplane Dusting for Anopheles Larvae Control. R. B. Watson. Wilson, Dam, Ala.—p. 862
- Industrial Relations in Malaria. C. P. Coogle. Houston, Texas. C. Barrow. Savannah, Ga. W. G. Stromquist. Knoxville, Tenn. and D. Clark. Bodin, N. C.—p. 873

Texas State Journal of Medicine, Fort Worth

32:259 318 (Aug.) 1936

- The Doctor's Visit. S. R. Roberts. Atlanta, Ga.—p. 266
- Service. A Philosophy of Success. W. B. Russ. San Antonio.—p. 271
- Treatment of Burns. Analysis of 235 Cases. H. Poyner. Houston.—p. 274
- Certain Applications of Bacteriology of Brucella Group to Clinical Problems of Brucellosis. H. A. Kemp. Dallas.—p. 279
- Parthenium Hysterophorus. Antigenic Properties. Respiratory and Cutaneous. I. S. Kahn and Emma M. Grothaus. San Antonio.—p. 284
- Problems in the Management of Allergic Disease. H. E. Prince. Galveston.—p. 289
- *Gonorrheal Endocarditis with Amyloidosis. J. F. Pilcher. Galveston.—p. 292
- Treatment of Sterility. L. J. Glober. San Antonio.—p. 296
- Evolution in Study and Practice of Medicine in Texas in Sixty Years. J. M. Frazier. Belton.—p. 300
- Spirochetosis. Icterohaemorrhagica. Report of Three Cases. O. W. Little, Tuscola.—p. 305

Gonorrheal Endocarditis with Amyloidosis—According to Pilcher, cases of endocarditis diagnosed as being of gonorrheal origin can be roughly divided into three groups. 1. Those cases in which blood cultures or cultures taken directly from vegetations at necropsy are positive for gonococci can be considered proved. 2. Cases in which there is a definite history of preceding gonorrheal infection, and in which smears from vegetations show gram-negative diplococci, can be considered strongly presumptive. 3. Other cases in which an endocarditis follows an acute gonorrheal infection but in which no bacterial evidence is obtained can be considered no more than probable. The author reviews the literature of gonorrheal endocarditis and reports in detail one of his cases in which the occurrence of amyloidosis, apparently as a result of the infectious process, is worthy of note. Amyloidosis is rather common, and about 80 per cent of cases are due to chronic tuberculosis of lungs or bone. The other most frequent causes of amyloidosis are chronic osteomyelitis, suppurations, syphilis, leukemia and multiple myeloma. The chief point of interest in the reported case is that as far as can be determined by a careful search of the literature, there is no other case on record in which amyloidosis was caused by gonococcal endocarditis and septicemia. In the absence of tuberculosis or any other of the usual causes of amyloidosis, it is fairly certain that the infectious process caused the condition in this case. There is small chance that the amyloid deposition had begun before the endocarditis, the patient being a normal healthy young man. This brings to attention another point of interest that is the huge deposition of amyloid in this case must have taken place in five months. Although there are no expressions of opinion in the literature as to how long a period is required for the development of amyloidosis, it is usually considered to be a more long-continued process.

Virginia Medical Monthly, Richmond

63 263 328 (Aug.) 1936

- Rocky Mountain Spotted Fever as Found in the East W P Caton Alexandria—p 263
- Expert Testimony and Its Relation to Mental Responsibility and Neurologic Injury B R Tucker Richmond—p 267
- Enuresis in Children J V Bickford Norfolk—p 271
- Perforating Wounds of Chest J C Motley Abingdon—p 274
- Treatment of Inguinal Hernia E Bassim translated by C R Robins Richmond—p 279
- History of Obstetrics in Virginia P Rucker Richmond—p 283
- Orthopedic Treatment of Infantile Paralysis A S Lloyd Norfolk—p 290
- The Hospital and the Organized Medical Profession H F Sanger Chicago—p 292
- Acute Abdominal Emergencies Some Diagnostic and Therapeutic Considerations J S Staley Marion—p 296
- Eye Injuries Caused by Stone Splinters Case Reports H L Mitchell Lexington—p 302
- Apical Systolic Murmur J W Hunter Jr Norfolk—p 303
- *Toxemia of Intestinal Origin and Its Treatment with Castor Oil and Castor Oil Derivatives M Schoenbaum and W A. Moomaw Richmond—p 306
- Eclampsia Crural Monoplegia of Cortical Origin W McMann Danville—p 310

Treatment of Intestinal Toxemia with Castor Oil—Schoenbaum and Moomaw show that the colon is the principal focus of infection in toxemia and should receive at least as much attention as the teeth tonsils and other structures. Many constitutional disturbances as well as those of the abdominal cavity have their origin in a toxic condition of the enteric tract. In this connection the author mentions nervous, hepatic, biliary circulatory and respiratory disorders, anemias, rheumatism, arthritis disorders of the skin, backache and other disturbances. He says that the so called normal flora of the intestinal canal may assume pathologic activities under favorable conditions. The colon bacillus is the agent most frequently responsible for nongonorrheal infections of the genito-urinary system. Measures aimed at the detoxification of a septic colon will often help in solving a difficult diagnostic problem. The theory of intestinal toxemia is supported by clinical experience. In discussing the treatment, the author presents evidence on the detoxifying effect of castor oil and its conversion product sodium ricinoleate.

Western J Surg, Obst & Gynecology, Portland, Ore

44 455 506 (Aug.) 1936

- Antethoracic Esophagoplasty Report of Completed Case T F Mullen San Francisco—p 455
- *High Right Transverse Abdominal Incision in Congenital Pyloric Stenosis Its Value in Prevention of Evisceration C W Brunkow Portland Ore—p 461
- Biliary Dysysnergia Cholangiographic Recognition and Its Significance R R Best and N F Hicken Omaha—p 467
- Acute Pancreatitis Report of Six Cases E M Jones St Paul—p 474
- Plastic Surgery of Ear H B Graham San Francisco—p 478
- Atypical Attenuated Osteomyelitis J E Klein Chicago—p 481
- Concerning Use of Kirschner Wire in Fractured Neck of Femur D V Bosworth New York—p 484

High Right Transverse Abdominal Incision in Congenital Pyloric Stenosis—Brunkow outlines a technic in the surgical management of congenital pyloric stenosis. He emphasizes the following points: 1 Supplying adequate tissue fluids by hypodermoclysis and blood transfusion before operation is done. 2 Providing carefully controlled local heat to the baby's body and warmth in both the nursery and the operating room and recognizing the fact that a 4 Kg infant's heat radiating surface is proportionately twice that of a 72 Kg adult. The smaller the baby the greater the proportionate surface area. 3 Further avoiding body heat loss by keeping the baby under cover during the application of restraints and by eliminating the refrigeration of ether and alcohol baths as a part of the abdominal skin preparation. 4 Employing local anesthesia because it is considered safer than inhalation anesthesia for starving babies. 5 Employing a high right transverse abdominal incision for the Rammstedt operation as an aid in the local anesthesia method as well as providing a wound less likely to permit evisceration during convalescence. 6 Maintaining near perfect hemostasis and remembering that a 4 Kg baby's blood volume is one-eighteenth that of a 72 Kg adult and that consequently the total blood loss allowed in an infant should be eighteen times less than that resulting from an abdominal operation in an adult.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

17 249 334 (Aug.) 1936

- Bilirubin Content of Blood and Urobilinogen Content of Urine in Diabetes Mellitus Note I M Rabinowitch—p 249
- Experiments on Immunizing Properties of Undiluted and Diluted Diphtheria Formal Toxoid W A Timmerman and A C Brandenburg—p 252
- *Studies on Excretion of Urinary Porphyrin in Rheumatic Fever Eklund M Kapp and A F Coburn—p 255
- Estimation of Phosphatase in Fluoride Blood J E J Crane and C F M Rose—p 267
- Some Chemical Methods for Detection and Rough Estimation of Arsenic in Biologic Materials N W Pirie—p 269
- Staphylococcal Toxin in Treatment of Diabetes R S Wale and K J Madders—p 279
- Influenza Virus on Developing Egg I Changes Associated with Development of Egg Passage Strain of Virus F M Burnet—p 283
- Observations on Effect of Louping Ill Virus on Developing Egg F M Burnet—p 294
- Immunologic Relationship Between Kikuth's Canary Virus and Fox Pox F M Burnet and Dora Lush—p 302
- Guinea Pig Method of Assay of Liver Extract Note B M Jacobson—p 307
- Typhus Group of Diseases in Malaya Part VI Search for Carrier R Leithwaite E P Hodgkin and S R Savor—p 309
- Purification of Staphylococcus Toxoid L B Holt—p 318
- Transmission of Influenza Virus to Hedgehog C H Stuart-Harris—p 324
- Anaerobic Pneumococcus F Smith—p 329

Excretion of Urinary Porphyrin in Rheumatic Fever

—The present investigation was undertaken by Kapp and Coburn to determine the type of porphyrin excreted in acute rheumatism and to study the relationship of porphyrinuria to activity of the rheumatic process. Their attention was confined to urinary porphyrins which were detected and identified by spectroscopic examination of ether extracts. In summarizing the results of their studies they state that: 1 The urine of patients with rheumatic fever contains abnormally large amounts of coproporphyrin qualitatively indistinguishable by visual spectrometric methods from the porphyrin normally present in the urine of healthy persons. 2 Coproporphyrin isolated from the urine of rheumatic patients has been provisionally identified as isomer III. 3 The urine of rheumatic patients nearly always contains part of the coproporphyrin in combination presumably with a metal. This combined porphyrin has been observed only sporadically in urines from other sources. 4 The increase of urinary porphyrin appears concurrently with the symptoms of rheumatism. There is no increase following recovery from hemolytic streptococcus throat infections in the absence of a rheumatic attack. 5 The porphyrinuria of acute rheumatism is therefore related to the rheumatic process itself and not to the preceding respiratory infection. The authors discuss the possible significance of these observations.

British Journal of Physical Medicine, London

2 41 62 (July) 1936

- Pigmentation W N Goldsmith—p 43
- Radiation of Cavities of Body Experimental and Clinical Review S K Westmann—p 47
- Short Wave Treatment of Pubertal Acne E. Last and Stein—p 49
- Misuse of Summer Mary E. Ormsby—p 51
- Hay Fever and Its Treatment St George's Hospital Technic L D Bailey and D C Shields—p 52
- Occupational Therapy Methods Used in Convalescent Hospital J Cunningham—p 53
- Infra Red Ray Therapy C E Michael—p 55

British Journal of Radiology, London

9 413-486 (July) 1936

- Radiology in Obstetrics Consideration of Its Dependability R E Roberts—p 415
- New X-Ray Tube for 700 Kilovolts and Some Measurements of Penetrating Radiation A Bouwers and J H van der Tuik—p 431
- High Voltage X-Ray Tubes in the United States of America J J Read—p 442
- Hereditary and Congenital Large Parietal Foramina E D Innes—p 456
- F W Taylor—p 456
- R Doses in Primary Mammary Carcinoma J H D Webster—p 457
- Effect of Ultra High Frequency Currents (Ultra Short Wave) Combined with Nonlethal Doses of Radium Radiations on Experimental Rat Tumors H J Taylor—p 467
- Cyanosis in Infants Two Unusual Cases I Kersey—p 472

British Medical Journal, London

2: 109 162 (July 18) 1936

- Splenomegaly E R Carling—p 109
- Role of Sympathetic in Sensory Conduction and Certain Neuralgias W Harris—p 112
- Treatment of Hemorrhage I J Wood—p 115
- Gonococcal Arthritis in Mother and New Born Infant Jean M MacLennan—p 121
- Vinyl Ether New Method of Administration V Goldman—p 122

Treatment of Hemorrhage—Wood asserts that the recent introduction by Marriott and Kekwick of continuous intravenous blood transfusion has provided a new weapon for the treatment of hemorrhage. Patients with hematemesis and melena have been selected, and although there is as yet not sufficient evidence to show the indications for operation in these cases, it is felt that a strong plea may be advanced for continuous blood transfusion as a valuable aid in treatment. At the beginning of the present investigation patients were given large volumes of dextrose (from 2 to 5 per cent) and physiologic solution of sodium chloride intravenously by the continuous drip method. The fluid was allowed to run in at the rate of 4 or 5 ounces (120-150 cc) an hour, and the administration was continued for from one to three days. A moderate improvement was noted in most cases. It has been shown however that dextrose and sodium chloride both diffuse rapidly through the capillary walls and that dextrose-saline solutions are therefore very inferior to citrated blood in maintaining the restored blood volume after a large hemorrhage. If given in excess they would contribute to the edema. Moreover the transfusion of saline solution and dextrose produced no rise but occasionally a slight fall in the percentage of hemoglobin and it remained at a low level for a week or more. Occult blood often persisted in the stools, showing the presence of an ooze from the damaged vessel, which retarded the rise in hemoglobin. The blood urea usually remained elevated for several days and then, in cases in which recovery occurred, slowly fell. In the fatal cases a further rise took place prior to death. Finally there was a marked tendency for the hemorrhage to recur unless the vessel was ligated surgically. When the contribution of Marriott and Kekwick appeared, their methods were adopted with minor modifications in the technic of administration. Citrated blood was given at the rate of from 90 to 150 cc an hour and the hemoglobin was slowly elevated to more than 70 per cent in from twelve to forty eight hours. After the transfusion was finished the hemoglobin sometimes tended to fall slightly, but finally it rose toward normal. The dramatic changes observed during the continuous transfusion of blood have been described by Marriott and Kekwick, and the present study confirms their reports. A series of cases are described illustrating changes in mental state, hemoglobin percentage and blood urea. It is suggested that the changes in height of the blood urea indicate the extent and rapidity of gastro intestinal hemorrhage and aid in prognosis and treatment.

2: 163 210 (July 25) 1936

- "And the Future" E F Buzzard—p 163
- Abduction Method Considered as Exponent of Surgical Principles in Routine Treatment of Fracture of Neck of Femur R Whitman—p 167
- Shellfish and Public Health R W Dodgson—p 169
- Hearing Aids G E Martin—p 173
- Unusual Case of Jaundice in Miner J A McKeon and H C Brown—p 174
- Ophthalmic Catastrophe New Syndrome A Tumarkin—p 175

2: 211 268 (Aug 1) 1936

- Effect of Toxic Substances on Blood-Forming Organs with Especial Reference to Therapeutic Drugs L J Wits—p 211
- Physical Methods of Endocrinotherapy A P Cawadiaz—p 215
- Treatment of Hallux Valgus and Rigidus T P McMurray—p 218
- Problems of Chance in Clinical Work D Mainland—p 221
- Visscher Bowman Test for Pregnancy Gladys H Dodds—p 224

Effect of Toxic Substances on Blood-Forming Organs—Wits finds that the toxic effects on the blood-forming organs of drugs, such as aminopyrine, neoarsphenamine and gold compounds are usually the result of idiosyncrasy and occur with doses that are well within the ordinary therapeutic limits. In certain cases the patient becomes sensitized to the drug and an allergic type of response occurs. Considerable hardship may result from failure to realize the small dosage that may be

responsible for damage to the bone marrow in predisposed individuals, the long incubation period, and the protracted duration of the lesion. The lesions produced in the marrow are briefly reviewed and classified under the headings of regenerative hyperplasia, dysplasia, neoplasia and aplasia.

East African Medical Journal, Nairobi

13: 97 128 (July) 1936

- The Medical History of Uganda A R Cook—p 99
- Rumination on Research and Eyewash H L Gordon—p 110
- Acute Pneumococcal Osteomyelitis of Fifth Lumbar Vertebra E J Blackaby—p 120

Indian Medical Gazette, Calcutta

71: 373-436 (July) 1936

- *Atabrine by Injection versus Quinine in a Tea-Garden Practice H Flack D C Majumder and K Goldsmith—p 373
- Observations on Relative Value of Atabrine and Quinine as Therapeutic Agents in Malaria R Bhattacharyya—p 375
- Treatment of Rhinosporidiosis in Man Based on Study of Sixty Cases F R W K. Allen and M L Dave—p 376
- Immunologic Methods in Determination of Infection in Random Sample of Hospital Admissions C L Pasricha G Panja and S Lal—p 395
- Gold Therapy in Pulmonary Tuberculosis S K Das—p 396
- Examination of Seminal Stains in Medicolegal Cases K R Ganguly—p 400

Atabrine versus Quinine—Flack and his associates made a comparison between atabrine by injection and quinine as antimalarial drugs. The numbers are too small to draw any definite conclusions, but it appears that atabrine by injection acts better than quinine in controlling the clinical symptoms and freeing the peripheral blood of parasites. It is more effective than quinine in subtertian malaria but has hardly any advantage in benign tertian malaria. It has no influence on the sexual forms of the parasite. It has less effect on splenic enlargement than quinine. Complications are negligible. The doses recommended by the makers are adequate for the type of coolies they deal with. As a practical proposition in a tea estate with considerable malaria it is at present too expensive a measure, but for European and Indian staffs they consider it the most reliable drug for subtertian malaria.

International Journal of Psycho-Analysis, London

17: 269 394 (July) 1936

- Future of Psychoanalysis E Jones—p 269
- Effect of the King's Death on Patients Under Analysis W R D Fairbairn—p 278
- The Psychology of Caricature E Kris—p 285
- Contribution to Analysis of Negative Therapeutic Reaction Joan Riviere—p 304
- Exhibitionism and Exhibitionists H Christoffel—p 321
- Training Analysis and Control Analysis Vilma Kovacs—p 346

Journal of Hygiene, London

36: 269-466 (July) 1936

- Study of English Diets by Individual Method Part I Men. E M Widdowson—p 269
- Id II Women E M Widdowson and R A McCance—p 293
- Cancer of Scrotum in the Blackburn Registration District 1837 1929 S A Henry and E D Irvine—p 310
- Toxicity to Animals of Some Oxidation Products of 1,4-Dioxan Note A Fairley E C Linton and A H Ford Moore—p 341
- Serologic Variants of Salmonella Typhi Murium with Especial Reference to Salmonella Typhi Murium Var Binns P R Edwards—p 348
- Natural and Immune Bactericidins for the Gonococcus Y B Abdoosh—p 355
- Ga Producing Variety of Bacterium Alkaliscens (Andrewes) J Bamforth—p 363
- Antigen of Bacillus Typhosus Notes E S Horgan—p 368
- Statistical Study of Sex Ratio at Birth W T Russell—p 381
- Studies in Declining Birth Rate Wales and South England W J Martin—p 402
- Incidence of Weil's Disease in Fish Workers in Aberdeen J Smith and L S P Davidson—p 438
- *Boric Acid as Selective Bacteriostatic Agent E M M Blair—p 446
- Incidence of Intrathoracic Tumors in Edinburgh Royal Infirmary Note M El Gazayerli—p 449
- Resistance Developed Against Bacteriophage R T Scholtens—p 452
- Influence of Tuberculosis on Development of Brucella Abortus Infection E J Pullinger—p 456

Boric Acid as Selective Bacteriostatic Agent—Working with boric acid in the presence of a fermentable substance, Blair found that while it shows a marked degree of selectivity,

suppressing most strains of *Bacillus lactis-aerogenes* while allowing a profuse growth of most *Bacillus coli* strains, it is not unusual to find a strain of *Bacillus coli* which is susceptible or sensitive to the action of boric acid in a concentration of 0.5 per cent, or a strain of *Bacillus lactis-aerogenes* which can tolerate boric acid to this extent. A means of overcoming this difficulty can, however, be found when boric acid is used in conjunction with sodium sulfite. By the addition of sodium sulfite to a lactose boric-acid peptone water, it is possible by a suitable combination of these two chemicals to overcome to a large extent the overlapping that occurs in the results when boric acid is used alone and by this means to make possible a more definite line of demarcation between these two organisms. In a medium consisting of 100 cc of 1 per cent peptone water, 0.25 Gm of lactose, 0.5 Gm of boric acid and 1 Gm of sodium sulfite (anhydrous), the growth of *Bacillus coli* is but little hampered while that of *Bacillus lactis-aerogenes* is inhibited. The medium has been tested on some 494 strains of lactose-fermenting organisms. 450 strains isolated from specimens of water, thirty-six from separate samples of human feces, five from the excreta of cattle, one from a milk supply, one from a specimen of urine and one from a specimen of vomit. The author found that the medium has a marked selective action. It gives satisfactory readings within twenty-four hours of incubating at 37 C. The author is of the opinion that all strains capable of growth in this medium may be regarded as of definite sanitary significance, they are most likely of fecal origin, while those which fail to grow are of minor sanitary importance. He hopes that the boric sulfite test may prove a useful adjunct to the bacteriologic examination of samples of water.

Journal of Pathology and Bacteriology, Edinburgh

43 1 232 (July) 1936 Partial Index

- Blood Changes in Mice Bearing Experimental Sarcomas (A) Sarcomas Induced by Derivative of 1 2 5 6-Dibenzanthracene (B) Sarcomas Produced by Cell Free Filtrates of Mal Sarcoma 1 L Dorothy Parsons—p 1
- Origin of Fibrous Connective Tissue in Human Body T D Day—p 49
- Metastatic Tumor of the Breast Report of Case E K. Dawson—p 53
- Generalized Lymphatic Carcinosis (Lymphangitis Carcinomatosa) of Lungs T T Wu—p 61
- Antagonism in Development of Malignancy in Two Different Organs W Cramer—p 77
- Supravital Staining of Leukocytes in Normal and Leukemic Blood L E H Whitby and M Hynes—p 91
- *Rapid Method of Measuring Erythrocyte Diameters M Hynes and L C Martin—p 99
- Endocarditis Due to Diphtheroid *Bacillus* Structurally and Culturally Resembling *Diphtheria* *Bacillus* Case J Sutherland and R A Willis—p 127
- Primary Endothelioma of Pericardium S McDonald Jr—p 137
- Malignant Hemangio-Endothelioma Report of Two Cases R F Ogilvie and I Mackenzie—p 143
- Observations on Changes in Plasma Proteins in Experimental Tubular Nephritis With and Without Edema E G Oastler and S L Tompsett—p 151
- Attempts to Produce Immunity Against Yellow Fever with Killed Virus G M Findlay and R D Mackenzie—p 205
- Epidermal Heteromorphosis of the Vaginal Vault. G W Nicholson—p 209

Rapid Method of Measuring Erythrocyte Diameters—

Hynes and Martin describe a method of producing a diameter distribution curve of erythrocytes which permits direct measuring of cell images without pencil outlining. The optical system that they employ consists of a powerful source of light, a 100 candle power Pointolite contained in a light-proof box. The light is condensed by a lens system on the mirror of the microscope as a one-twelfth inch oil immersion lens and a $\times 20$ eyepiece being used. Extraneous light is excluded by a conical black cloth shield. Magnification varies with the distance of the screen from the eyepiece of the microscope and is controlled by a shelf adjustable for height and by three adjustable screws bearing the screen. It is rapidly established by incorporating a micrometer scale in the eyepiece of the microscope and using a stage micrometer in conjunction. Supposing that x divisions of the eyepiece micrometer equal 0.05 mm. on the stage micrometer using the lenses stated then the image of these x divisions projected on the screen must equal 10 cm at 2000 magnification. Alternatively the image of the stage micrometer may be

projected on the screen and measured directly. To avoid distortion of images, the screen must be truly horizontal and cells in the middle of the field must be measured. Erythrocyte measurement by this method depends on the assumption that the mean diameter of an erythrocyte, whatever its shape, is the same as the diameter of a circle of equal area. With circular erythrocytes the estimation is simple, with poikilocytes it is necessary to find a circle on the protractor such that the area of the erythrocyte outside the circle is equal to the area of circle unfilled. With a little practice it is possible to select the appropriate circle with surprising speed and accuracy. The authors demonstrate that by the use of this method the mean diameter and cell area figures may be obtained with a high degree of accuracy. The practical differences in result as compared with those obtained by the Price-Jones technic are negligible. The considerable saving of time by the use of this technic justifies its use in routine hematologic work.

Journal of Tropical Medicine and Hygiene, London

39 173 184 (Aug 1) 1936

- Lymphogranuloma Inguinale C L Wilmoth—p 173
- Treatment of Schistosomiasis B S Bindra—p 175

Lancet, London

2 115 170 (July 18) 1936

- Paroxysmal Hemoglobinuria L J Wits—p 115
- *Influenza Infection of Man from Ferret W Smith and C H Stuart Harris—p 121
- Intestinal Stricture and Its Association with Pernicious Anemia J C Hawksley and E. Meulengracht—p 124
- Technic of Spleen Puncture. L E Napier—p 126
- *Sodium Chloride in Diphtheria A Maclean—p 129
- Excretion of Drugs Its Influence on Therapeutic Results with Especial Reference to Antimony Treatment of Schistosomiasis. M. Khalil—p 132

Influenza Infection of Man from Ferret—Smith and Stuart-Harris report that, forty-five hours after contact with sick ferrets, Stuart-Harris went down with a typical attack of influenza. Throat and nose washings were taken twenty-four hours after the onset and again on the fourth and fifth days of the illness. In each instance the washings were ground in a mortar with a little quartz powder to break up shreds of mucus and then centrifugated. The supernatant fluid was used for the animal tests. Blood was also withdrawn on the fourth day when the patient's temperature was at its maximum, citrated and tested on a ferret. Fortunately samples of the patient's serum, obtained a few months before his illness were available. Further samples were obtained on the third, eighth, sixteenth, thirty-first, forty-fourth and eighty-first days after the onset of symptoms and titrated by the mouse protection test. The technic of antibody titration used was identical with that described by Laidlaw and his co-workers. The results show that the patient possessed no demonstrable neutralizing antibodies against human strain virus at the time of infection. Following the illness there was a steady rise of antibodies. It is possible that they began to appear as early as the third day when the nasopharynx still contained virus. There is no doubt that a decline of circulating antibodies had set in by the forty-fourth day, but experiments suggest that this decline is very gradual. Another experiment shows that the patient had antibodies against the swine strain of virus prior to his illness. It is not surprising that these were of no avail in preventing his infection in view of the total failure of the standard swine strain serum to prevent mouse infection with the strain of virus recovered. Although the patient was engaged about the time of infection in collecting material from cases diagnosed as influenza the later clinical and bacteriologic investigations led to the conclusion that the epidemic disease was no influenza. The animal tests of the samples collected fully confirmed this conclusion. The patient's nasopharyngeal washings reacted with infected mice, producing at the onset in all the animals isolated extensive lung lesions. The fact that animal passaged strains of influenza virus may retain their infectivity for some time is of some practical importance. Heretofore no attempt has been made to immunize laboratory workers exposed to infection but it is considered that the time may have arrived when this should be done in the case of those who are

demonstrable virus neutralizing antibodies. It is quite conceivable that a case of laboratory infection might be the starting point of an epidemic.

Sodium Chloride in Diphtheria—Maclean gives an account of an investigation carried out in Ruchill Hospital, Glasgow, in cases of diphtheria to observe the effect the administration of sodium chloride would have on the results of treatment. The cases were divided into four main groups according to the severity of the acute stage of the illness. Each patient admitted to the diphtheria wards was placed in one of two series. The first was treated in the usual manner employed in the hospital; the other received a definite additional ration of sodium chloride. In groups I, II and III, sodium chloride was administered to each patient in one series in the form of a teaspoonful of common salt by mouth three times daily for the first three weeks of hospital residence. All the patients in these three groups recovered. In group II the better results occurred in the cases in which extra sodium chloride was given, but again there was nothing significant. In group III the better results were noted in the series of cases in which extra sodium chloride was given, and there was distinct statistical significance in these results. It is noteworthy that this was so in spite of the tendency in group III for a greater proportion of the cases to be of a less severe type in the acute stage in the series in which extra sodium chloride was not given than in the other series. A number of patients in group IV were given salt by mouth as in the other groups, in others the method employed was to administer daily for a period of three weeks after admission 30 cc of 5 per cent saline solution intravenously slowly through a hypodermic needle. In a third set of cases in which the acute stage was of a more critical nature and feeding by mouth was precluded by vomiting, continuous rectal dextrose saline solutions were given and maintained until signs of acute toxemia had passed off. Taking group IV as a whole, a definite, though insignificant improvement is shown in the series of patients who received extra sodium chloride. Consideration of these results leads to the conclusion that the administration of extra sodium chloride to a series of patients with diphtheria is associated with an improvement as compared with a series that does not receive extra sodium chloride. The author points out that the observation that the administration of sodium chloride to patients with diphtheria is associated with better results is in accord with expectations if the view is accepted that in diphtheria there is a considerable deficiency in the secretion of the adrenal cortex. In support of this view it has long been recognized that adrenal hemorrhage is common in fatal diphtheria. Definite evidence has not yet been produced of the value that injections of adrenal cortex extract would have on the acute stage of diphtheria, and with the present prohibitive cost of potent extract an adequate trial would be very expensive. It seems, however, that sodium chloride is distinctly beneficial

2: 171 236 (July 25) 1936

- And the Future E F Buzzard—p 171
Septic Endocarditis Horder—p 174
Benign Spontaneous Pneumothorax I Gordon—p 178
Chromophobe Adenoma of Pituitary Associated with Cushing's Syndrome.
C J Fuller and Dorothy S Russell—p 181
*Changes in Intervertebral Disks Following Lumbar Puncture F J
Milward and J L A Grout—p 183
The Tomograph Its Use in Pulmonary Tuberculosis J B McDougall
—p 185
Bilateral Massive Collapse of Lungs A K Miller—p 187

Changes in Intervertebral Disks Following Lumbar Puncture—Milward and Grout relate that during the last two years five patients attending the Chesterfield Royal Hospital who had been operated on under spinal anesthesia complained at varying intervals after operation of pain in the back and occasionally of pain in the lower limbs. The roentgen examination revealed in all definite and progressive changes localized in one intervertebral joint. All complained of severe pain in the back, either partially or completely preventing them from walking or sitting up. All showed on examination that the lumbar spine was held rigid by muscle spasm in the flexed position. There was marked tenderness over one or all the spinous processes of the second, third and fourth lumbar vertebrae. In one patient the fully developed lesion was accompanied by retention of urine. In two cases there was intermittent backache of a mild character during the latent period. The roentgen exami-

nations all showed more or less similar changes: (1) a progressive arthritis localized to one intervertebral joint, (2) loss of joint space, (3) rapid progress of the lesion and (4) new bone formation linking up the articular edges of the bodies of the adjacent vertebrae. When the condition was recognized, the treatment adopted was fixation of the lumbar spine in extension with a full length ambulatory plaster jacket as for compression fractures. The authors think that the most satisfactory theory is that suggested by Pease—that the condition is due primarily to injury to the intervertebral disk, with secondary changes in the vertebral bodies. Pease suggested that the needle actually bored a hole in the annulus fibrosus through which the nucleus escaped. This would seem possible in children and would explain the early loss of joint space and the progressive nature of the lesion. Although it is conceivable that such a process may take place in the adult, the more likely explanation is that the trauma resulting from the impinging needle in the fibrous ring causes an inflammatory reaction with a consequent weakness in the fibrous wall permitting of a gradual escape of the nucleus pulposus. This is borne out by the x-ray appearances in three of the cases.

Medical Journal of Australia, Sydney

2: 132 (July 4) 1936

- Primary Bronchogenic Carcinoma G Halloran—p 1
Dental Decay as Index of Malnutrition P A Earnshaw—p 4
Dental Concept of Oral Infection R P Rheuben—p 13
Preliminary Treatment in Relation to Therapeutic Irradiation of Mouse Tumors W Moppett—p 15

2: 33 68 (July 11) 1936

- Defense of the Civilian Population Against Gas P R Weldon—p 33
Preparation and Testing of Surgical Catgut F Eleanor Williams—p 39
Chronic Gastritis H C R Darling—p 45
Antemortem Clots in Chambers of the Heart J B Cleland—p 50

South African Medical Journal, Cape Town

10: 391-430 (June 13) 1936

- Anemia Problem in Southern Rhodesia W K Blackie—p 393
Aim of Surgery in Treatment of Visceral Pain W Welchman—p 398

10: 431-462 (June 27) 1936

- Psychoneurosis D A van Binnendyk—p 433
Etiology of Peptic Ulcer P Leftwich—p 436
Medical Contracts in State Insurance J Collicie—p 439

10: 463-490 (July 11) 1936

- Preliminary Results of Measurements of Solar Radiation at Durban and Nelspoort Sanatorium G Riemerscheid—p 463
In Vitro Cultivation of Filtrable Viruses, with Particular Reference to Vaccine R A Alexander—p 467
Visceral Afferent Pathways H Zwarenstein—p 471
Nuclear Division in Sporozoites of Plasmodium Botha de Meillon—p 474
Note on History of Bilharziasis in South Africa F G Cawston—p 475
Primary Carcinoma of Lung T Schrire—p 475
Cancer in South African Natives M des Ligneris—p 478
Outbreak of Tick Bite Fever J H S Gear and C Bevan—p 485
Retrograde Intussusception of Jejunum Following Gastrojejunostomy Report of Case B J P Becker—p 489

Tubercle, London

17: 481-528 (Aug) 1936

- Dispensary Organization in England N Tattersall—p 481
Dispensary Organization in London F J Bentley—p 490
Dispensary Organization in Holland M R H Van Den Berg—p 492
Work of Tuberculosis F Bezançon—p 493
Statistical Interpretation of Data in Experimental Tuberculosis W N Berg—p 496
*Standard Method for Testing Antituberculosis Vaccines W N Berg—p 502

Testing Antituberculosis Vaccines—Berg points out that a standard or official method of testing a proposed antituberculosis vaccine is not available at present. Outlines are offered with the hope that other workers will revise them. A workable plan will then have been evolved which will enable workers in different laboratories to test the same vaccine by the same method. The author says that until recently the "longevity test" seemed the method of choice. In a second method lately used, principal animals and controls are killed at the same time after

infection and the character and distribution of lesions are compared. It is claimed that this 'lesion distribution test' correlates well with the longevity test. However, since physicians will expect a proposed vaccine to protect children against the effects of accidental reinfection as evidenced by greater longevity, the lesion distribution test is not applicable here. The author describes a longevity test with guinea-pigs. In his proposed method of testing antituberculosis vaccines the main points are: (1) selection of a highly virulent strain of human tubercle bacillus through virulence tests in cooperating laboratories; (2) use of two infection doses small in weight but sufficient to kill all controls in about 100 days average; and (3) statistical interpretation of the difference between mean (or average) days of life of immunized and control animals.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

52: 1151-1210 (July 13) 1936 Partial Index

Bilateral Cubital Paralysis in Course of Serofibrinous Pleurisy. F. Codvella, L. Ferrabouc and J. Henrion—p. 1152

*Special Character of Gastric Disorders in Course of Crain Alcohol Polyneuritis. M. Villaret, F. Moutier, L. Justin Besançon and H. P. Klotz—p. 1155

Liver in Alcohol Polyneuritis. M. Villaret, L. Justin Besançon and H. P. Klotz—p. 1159

Gastric Disorders in Alcoholic Polyneuritis.—Villaret and his collaborators call attention to the early appearance, constancy and other specific characteristics of gastritis accompanying alcoholic polyneuritis. Some gastritis was in fact observed in fifty of their cases of polyneuritis. Furthermore it preceded the appearance of the neuritis in all instances, occasionally by a few weeks but more often by several months. In forty-five of the fifty cases it was possible to note an abnormality of the gastric secretion. This was always in the same direction and consisted in achlorhydria (thirty-three cases) and a marked hypochlorhydria (twelve cases). When gastroscopic examination was performed early enough definite lesions of the stomach were seen. Most frequently this consisted in an atrophic gastritis which was especially characterized by a shallowness of the folds of the stomach. Furthermore, the motility of the stomach, which was especially active in the slight cases, was absent or practically absent in those with advanced atrophy. It was also noteworthy that improvement of the gastritis preceded that of the neuritis and that it was possible to observe a normal gastroscopy during persistence of the neuritic lesions.

Presse Médicale, Paris

44: 1353-1368 (Aug. 26) 1936

Heart Sounds. B. A. Houssay—p. 1353

*Anesthetic Infiltration of Thoracic Chain. P. Wertheimer and A. Trillat—p. 1356

Anesthesia of Thoracic Chain.—Wertheimer and Trillat impressed by the inconstancy of effect produced by infiltration of the stellate ganglion as compared with that of the lumbar region attempted an investigation of the anatomic relations and improvement in technique that might favorably affect the results. Two conditions are necessary to make it possible to infiltrate correctly a sympathetic chain or a ganglion. The first consists in determining the serous landmark by which the needle may be placed at the edge of the ganglion. The second presupposes a soft cellular tissue allowing the injected liquids to bathe the nearby nervous elements. These two conditions are realized by the upper segments of the thoracic chain. The point for penetration of the needle is situated from 5 to 6 cm. from the summit of a spinous process. The needle traverses the second intercostal space. It is well to infiltrate the superficial tissues by an injection made with a fine needle since this avoids the pain of passing the larger needle through the cutaneous tissues. The needle is directed forward and a little down to a depth of from 2 to 3 cm. and is halted by bony contact. The point of the needle is then against the neck or the head or the rib or on the lateral face of the vertebral body. The needle must be withdrawn a few millimeters and from 10 to 15 cc. of solution injected. The latter infiltrates the cellular space surrounding the sympathetic chain. By this technique it is easy to introduce the needle in the desired area and yet to avoid the danger of puncturing the pleura. They have never observed any accidents from this technique. The indications for such treatments may

be divided into painful disorders of the upper limb of phrenic pathologic origin, arteritis of the upper limb and bronchial asthma. In some of these conditions the authors were successful in relieving the symptoms. They were however, especially interested in proving that infiltration of the thoracic chain high up satisfies the technical rules and therapeutic necessities which infiltration of the stellate ganglion only partially supplies.

Schweizerische medizinische Wochenschrift, Basel

66: 817-852 (Aug. 29) 1936 Partial Index

*Fibroplastic Parietal Endocarditis with Eosinophilia of Blood. W. Löffler—p. 817

Pseudosyphilitic Subacute Hilifugal Bronchopneumonia in Lethargic Children. G. Fanconi—p. 821

*Polyavitaminosis in Nursing Fed with Fat Free Dry Milk. E. Wieland—p. 826

Elimination of Vitamin C in Tuberculous Children. J. L. Burckhardt and F. Weiser—p. 832

Bacteriology of Anaerobic Sepsis. A. Grumbach, A. Lemierre and J. Reilly—p. 834

New Observations on Meningo-Encephalomyelitis Caused by Animal Parasites. B. Galli Valerio—p. 836

Fibroplastic Parietal Endocarditis with Eosinophilia

—On the basis of observations in two cases which had a considerable resemblance Löffler directs attention to a peculiar disease entity, a fatal, subacute fibroplastic parietal endocarditis of the ventricles (the valves remain free), with severe eosinophilia of the blood but with complete intactness of the pericardium. As the result of the fact that the influx of the blood into the right ventricle is made more difficult by the parietal endocarditis, a stasis develops which resembles greatly that of Friedel Pick's syndrome. In both patients the disease was characterized by the absence of febrile temperatures although there was the possibility of a febrile reaction from pulmonary infarcts in one case. Regarding the etiology the author says that in one case *Streptococcus viridans* was demonstrable but that in the other case all cultural examinations of the blood, the puncture fluids and the organs remained negative.

Polyavitaminosis in Nursing Fed with Fat-Free Dry Milk.—Wieland reports a polyavitaminosis (keratomalacia and Barlow's disease) in a nursing aged 6½ months. Because the parents of the child had an exaggerated fear of milk crusts they had fed the child without a doctor's advice, for six months with a fat-free dry milk. This resulted in an avitaminosis (keratomalacia) which was preceded by a latent stage of two months' duration during which the nursing showed no increase in size or weight. The complicating Barlow's disease was probably the result of a lowered vitamin C content of the dry milk preparation and also of an insufficient utilization of the offered vitamin C as a result of the total lack of vitamin A in the food and in the organism. The combined administration of vitamins A and C resulted in complete clinical cure, except that a corneal lesion (leukoma adhaerens) remained on the left eye. The author stresses that this observation represents a new warning against the dangers involved in the prolonged use of special milk preparations intended to be used only for a short time for therapeutic purposes.

Chirurgia degli Organi di Movimento, Bologna

22: 183-284 (Aug.) 1936 Partial Index

Birth Injuries of Shoulder Joint. O. Scaglietti—p. 183

Detachment of Os Acetabuli (Os Cotyloideum Superius). Case Report. De Luca—p. 234

Tendon Transplantation in Therapy of Radial Paralysis. Physiol. Aims. A. Bonola—p. 239

Roentgen Aspects of Old Fractures of Styloid Process of Ulna. A. Triangular Bone of Carpus. G. Boriani—p. 255

Alcoholization of Intercostal Nerves in Therapy of Fractures of Ribs. F. Rabboni—p. 263

*Cerebrospinal Fluid in Vertebral Arthritis. L. Bocchi—p. 273

Cerebrospinal Fluid in Vertebral Arthritis.—Bocchi made examinations of the cerebrospinal fluid in fifty patients suffering from rachalgia in vertebral arthritis. The etiologic diagnosis was beyond question in all cases because the clinical symptoms and roentgenograms which have been previously described as characteristic of vertebral arthritis existed in all cases and hyperemia by means of Bier's hot air treatment and immobilization of the patient gave satisfactory results in all author's cases. The lumbar punctures were harmless and reduced pain. The author states that there are no modifications

of the cerebrospinal fluid in vertebral arthritis. The examination of the fluid is of diagnostic value in cases of rachalgia of doubtful origin. Alterations of the cerebrospinal fluid in rachalgia indicate involvement of the nervous system or of the meninges. The nervous disturbance may cause clinical symptoms of vertebral arthritis in the absence of the latter or they may develop as complications in vertebral arthritis.

Diagnostica e Tecnica di Laboratorio, Naples

7 241 320 (April 25) 1936

Behavior of Putrid Substrata Used as Cultural Media for Certain Dysenteric Bacteria. G. Morselli.—p. 241

*Practical Value of Ucko's Takata-Ara Modified Test for Function of Liver. G. Cozzutti.—p. 249

Qualitative Analysis of Agglutinins in Course of Typhoid Fever. F. Casanova and L. Bruni.—p. 259

Micromethod for Determination of Galactosemia. B. Della Maggiore.—p. 273

Ucko's Test for Liver Function.—Ucko's modified technic for performing the Takata-Ara test is described in the *Comptes rendus des seances de la Societe de biologie* 118 534 (No. 6) 1935. The test is a precipitation reaction produced by mercury in serum of hepatic patients. According to Ucko the test is of diagnostic value in liver diseases. A strongly positive reaction (third degree of intensity reaction) is, in his opinion, an almost certain sign of liver cirrhosis. Cozzutti performed the test in 433 patients suffering from several diseases without involvement of the liver and in eighty three patients suffering from liver diseases. As a rule it gave negative results in all patients in the first group and more or less positive results in the second. Strongly positive reactions (third degree intensity reaction) were obtained in liver cirrhosis and in syphilis of the liver. In general, the results of the test agreed with those of induced hyperglycemia and also with the clinical evolution of the disease. In some cases the results of an anatomopathologic study verified those previously given by the test. Cozzutti concludes that Ucko's test is of practical value as a preliminary or complementary test for function of the liver, especially that of liver proteosynthesis, but that it is not a specific test for liver cirrhosis.

Minerva Medica, Turin

2 193 216 (Sept. 1) 1936

Innervation of Carotid Sinus. Histopathologic Studies. G. M. Rasario.—p. 193

Behavior of Blood Picture Especially Eosinophils in Rheumatic Arthritis Under Action of Colloidal Sulfur Treatment. F. De Matteis and G. Verdolini.—p. 201

Variations of Amount of Complement in Blood Serum in Course of Fangotherapy. S. Battistini, A. Robecchi and A. Silvani.—p. 205

Eosinophils in Arthritis Under Colloidal Sulfur Treatment.—De Matteis and Verdolini studied the behavior of eosinophilic leukocytes following parenteral administration of colloidal sulfur in patients suffering from rheumatic arthritis and in normal persons. The treatment caused complete eosinophilia in arthritic patients and complete eosinopenia in normal persons. The author believes that the action of colloidal sulfur on eosinophils depends on the reaction of the bone marrow which reaction is in relation with the presence or absence of constitutional sympathetic disturbances. Owing to the presence of constitutional sympathetic disturbances in patients suffering from arthritis, colloidal sulfur causes a reaction of allergic sensitization with consequent stimulation of the bone marrow to an abundant production of eosinophils and eosinophilia. In normal persons, owing to the absence of sympathetic disturbances, the reaction of the bone marrow following the administration of colloidal sulfur is one by which the production of eosinophils is inhibited. The latter reaction accounts for the production of eosinopenia in normal persons, after administration of colloidal sulfur.

Complement in Blood Serum in Course of Mud Therapy.—Battistini and his collaborators found that the amount of complement in the blood serum in the course of rheumatic fever is diminished in 50 per cent of the cases and that there is a parallelism between the amelioration of the clinical symptoms and the increase of the amount of the complement in the blood serum. The authors made determinations of the variations of the complement before and after mud therapy in twenty six patients suffering from chronic polyarthritis of

different types and from rheumatic fever. The treatment consisted in fifteen applications of thermal muds. The amount of the complement, in patients suffering from chronic polyarthritis, was normal before the therapy and did not change after it. The amount of the complement was greatly diminished (in some cases up to complete disappearance), before the treatment, in patients suffering from rheumatic fever and diminished still more after it. The lower figures were obtained in cases in which the test was performed shortly after subsidence of the acute attack, when the clinical symptoms and sequels left by the disease were still noticeable. The authors believe that their results prove the existence of a relation between complement and rheumatic fever and also between complement and the clinical symptoms of the disease. The diminution of the complement, after mud therapy in patients suffering from rheumatic fever, is caused by a reaction of the organism to the treatment which manifests itself in the reappearance of the clinical symptoms. The results obtained by the authors point out also the sensitivity of the test which showed the changes of the amount of complement paralleling the clinical symptoms, although the latter evolved only to a small degree in the authors' cases.

Arquivo de Patologia, Lisboa

7 153 384 (Dec.) 1935

Pathologic Anatomic Contribution to Problem of Sepsis. F. Wohlwill.—p. 153

Tumors of Cutaneous Glands. H. Parreira.—p. 244

*Determination of Labor. J. Fontes.—p. 283

Determination of Labor.—Fontes reviews the follicular, the corpus luteum, the hypophyseal and other theories advanced to explain the phenomenon of labor. Investigation led him to believe that labor is due to an action exerted by the particular state of the musculature and the uterine innervation at this moment. The distention produced by the egg has undoubtedly a stimulating action on uterine contractions. This distention is similar to that which the blood exerts on the heart. It is, however, impossible to explain the determination of labor simply by uterine distention. The author was able to find an oxytocic substance for the uterus of the guinea pig in the blood of a woman in labor. This substance produces rhythmic and energetic contractions of the uterus for hours. When two horns of the same uterus are placed in oxygenated warmed Ringer's solution in separate containers and to one is added 1 or 2 cc. of defibrinated blood from a woman in labor and to the other the same quantity of blood from a woman not in labor or from a man, this oxytocic action is readily visible. It was also observed that a woman's blood loses this property a few hours after labor ceases. He believes therefore that the placenta perhaps plays a part in the determination of labor. In support of this view he found that placental extracts exert a definite oxytocic action, while muscular extracts prepared with the same technic are ineffective. He injected placental extracts into female guinea-pigs at term and was able to verify the fact that gestation was thereby interrupted.

Semana Medica, Buenos Aires

43 485 552 (Aug. 20) 1936 Partial Index

Puerperal Fever. J. B. González.—p. 485

Postoperative Pulmonary Infarct. Case. E. J. Puyó Villafañe.—p. 503

*Ozone Treatment in Anthrax. S. Prihluda.—p. 510

Complete Prolapse of Uterus. Case in which Coulin's Operation was

Performed. R. Felner.—p. 526

Mioma of Vagina. Case. Ofelia Beviacqua.—p. 531

*Magnesium Sulfate in Cough. A. V. Freyre.—p. 537

Surgery in Ovarian Dysmenorrhea. M. Reyes.—p. 545

Ozone Treatment in Anthrax.—Prihluda reports satisfactory results from pure ozone of high concentration in the treatment of anthrax. He has treated six patients, some of whom were suffering from grave forms of the disease. The injections, which may be given intravenously, subcutaneously or intramuscularly should be made slowly. For intravenous injections the patient lies at rest after previous administration of morphine and camphor in oil. The quantity of ozone to be injected intravenously varies between 25 and 250 cc. When the injection is made by the intramuscular and subcutaneous routes, an infiltration of the gas is made at the peri-inflammatory zone. The orifice of puncture is covered with collodion to prevent reflux of the injected gas. The quantity of gas to be injected varies between 20 and 400 cc. The superficial application of

ozone is made by means of a funnel covering the anthracic zone and connected with the ozone generating apparatus. This is done in order to contact the inflammatory zone with an atmosphere of pure concentrated ozone, under light pressure, for from five to fifteen minutes. The author concludes that the treatment by ozone is efficacious in anthrax. It results in immediate sedation of pain, great reduction of the evolution period, diminution of the malignant condition of the disease and improvement in the general condition. The treatment is simple, harmless and painless. It can be given to ambulant patients, who are able to resume work shortly after having been treated. The scars left by anthrax treated by ozone are not deforming.

Magnesium Sulfate in Treatment of Cough.—Freyre resorted to hypodermic injections of magnesium sulfate in the treatment of sixty children suffering from asthmatic bronchitis, whooping cough and spasmodic cough of uncertain etiology, with or without vomiting. The dose varies between 1 or 2 cc. of a 15 per cent solution of magnesium sulfate. The injections are given every day or at intervals of two or three days, according to the seriousness of the disease. In all the patients treated by the author (except two suffering from asthmatic bronchitis) the treatment produced antispasmodic and sedative effects that lasted for five or six days. The asthmatic and spasmodic crises and the whooping paroxysms and vomiting were controlled generally from the first injection and the patients began to convalesce after from one to three injections. No patient in the author's group showed signs of general or local intolerance and no complications set in. The treatment is harmless and easy to perform. Cystitis, nephritis and meningitis are contraindications. The development of respiratory paralysis is not likely. It would be the result of an overdose of magnesium sulfate and would indicate an immediate intravenous or intramuscular injection of calcium chloride or a subcutaneous injection of atropine.

Kinderärztliche Praxis, Leipzig

T: 293 344 (July) 1936 Partial Index

- *Peculiar and Not Hitherto Described Phenomenon of Prophylaxis of Measles with Normal Blood F. Goebel—p. 293
- Leukemic Articular Symptoms During Childhood J. Krafft—p. 295
- Hanganatziu-Deicher's Reaction in Diseases of Lymph Nodes During Childhood E. A. Voss—p. 299

Prophylaxis of Measles with Normal Blood—Goebel directs attention to the possibility of immunizing against measles by means of normal blood. He reports that a child aged 1 year showed the prodromes of measles, September 27. September 30 he injected 35 cc. of maternal citrate blood into the thigh of the brother aged 5 who had remained extremely delicate after an attack of empyema. During the first few days the boy felt well but on October 7 (the eleventh day of his incubation period) he had fever, a painful swelling of the thigh and enlargement of the inguinal glands. However on the following day the local symptoms had almost completely disappeared and the fever showed no further increase. The day after that nothing more was noticeable and although the boy had not been isolated from his sister he did not develop measles. The author mentions several other cases in which he made similar observations. In discussing the reaction he points out that active immunity against measles is a virucidal immunity. Convalescent serum as well as normal blood has a virucidal action. Aside from the convalescent serum of poliomyelitis, the serum of measles is perhaps the only virucidal serum of clinically demonstrated action. As a rule it intercepts the virus which circulates in the blood and destroys it there without local reaction. In the described cases there developed a local reaction for two reasons: 1. The virucidal antibodies of the injected blood remained entirely or partly localized just as in uninfluenced measles this binding on the skin produces the cutaneous exanthem in the same manner as it comes to the formation of an area in case of vaccination. In all the cases observed by the author the reactions appeared on the tenth or eleventh day of incubation that is at the time of onset of the prodromes of measles. Since at this time the antibodies of the infected organism commence their activity it is possible that in this process there is an addition of passive and active immunity. The author is unable to give a definite explanation as to why the antibodies remained localized in these cases.

However, he points out that an allergic factor might be involved. (The first two children were from an allergic family.) Moreover, he thinks that the trauma involved in the introduction of relatively large quantities of blood might be of some significance, it may have retarded the resorption.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin 102 257 364 (July) 1936

- Eclampsia and Premature Detachment of Placenta K. De Snoo—p. 257
- Late Injuries of Vascular System After Eclampsia and Preeclampsia M. Nuri—p. 282
- *Ventrosuspension of Uterus and Its Permanent Results. W. Sigwart—p. 286
- Naevus Teleangiectaticus and Pregnancy L. Wirth—p. 298
- Sclerema Neonatorum and Its Treatment with Thyroxine E. Schulze—p. 303
- Persistent Thymus and Delivery H. Kramm—p. 311
- *Intracranial Hemorrhages in the New Born K. Hollósi—p. 311
- Birth in Knee Elbow Position (Without Support for Perineum) S. A. Fraymann—p. 324

Ventrosuspension of Uterus and Its Results—Sigwart says that for a number of years he employed the operation of Doléris in the modification of Bumm. However, this method did not entirely satisfy him. It was his aim to put the uterus as much as possible into the physiologically suspended anteverted flexed position, to see to it that the vesico-uterine excavation would retain its normal basin shape, to prevent adhesions between the round ligament and the long abdominal muscles, and to effect a firm and permanent connection between the ligaments and the fascia. He uses Pfannenstiel's incision. After the uterus has been detached from its adhesions and after the necessary interventions on the adnexa have been completed, so that the peritoneum can be closed, the ventrosuspension is done. He grasps the round ligament on both sides, approximately 3 or 4 cm. away from the uterine attachment, by means of a Kocher clamp. Then he pierces with another clamp the peritoneum laterally to the rectus muscle, where underneath the severed fascia of the internal oblique muscle a small triangle of peritoneum lies free, but he carefully avoids the small vessels passing there. He directs the ligament toward the latter clamp, grasps it and, following removal of the first clamp, he pulls it through the peritoneum. The same is done on the other side. The transverse section of the fascia is so deep downward and so long that the ligament will lie directly in the angle of the fascial incision. Then it can be exactly determined how far the loops of ligament have to be pulled out in order to secure the uterus in the desired suspension. Then the abdomen is closed by a continuous peritoneal and muscular suture. The fixation of the ligaments is done in such a manner that the first three or four of the button sutures, right and left, with which the fascia is closed grasp also the loops of ligament. In this manner the ligaments are fixed securely to the underside of the fascia just as it is done in the Alexander-Adams operation. However this ventrosuspension is not enough for the author, but he combines it with the abdominal vesicofixation. He used this method in 236 cases and shows that it fulfils to a large extent all demands that are made of an operation of this type. The danger of ileus is almost completely excluded. The position of the uterus obtained by it is practically physiologic, the result is usually permanent vesical difficulties are practically absent no disturbances result during delivery, and there are no complaints about difficulties at the sites of fixation. To be sure the author admits that a certain percentage of failures must be counted on but the percentage of failures in this operation is considerably below that of other interventions for the correction of positional abnormalities.

Sclerema Neonatorum and Its Treatment with Thyroxine—Schulze says that the treatment of sclerema neonatorum is usually only symptomatic and consists in supplying warmth and in massaging the involved parts. He refrained from massage but gave especial attention to proper warming and general care. He found that only the milder cases responded to this treatment and he decided to try thyroxine in extremely severe general sclerema. The intramuscular injection of thyroxine produced surprisingly favorable therapeutic results. The author mentions various theories regarding the pathogenesis of sclerema and stresses particularly H. J. Mann's experimental demonstration of a disturbance in the

swelling conditions of the connective tissue His own observations in the course of the thyroxine therapy indicated that the chief factor is a disturbance in the water economy of the skin and of the subcutaneous tissues, for the appearance and disappearance of the sclerodema was accompanied by rapid changes in weight The behavior of the urinary secretion in one case in which thyroxine was used makes the importance of the disturbance in the water exchange even clearer The author thinks that thyroxine reduces the swelling of the sclerodematous tissue He is unable to say whether in addition to this a circulatory action plays a part

Intracranial Hemorrhages in the New-Born—Hollosi maintains that the etiology of intracranial hemorrhages is not uniform. It is probable that in some of the cases a constitutional abnormality is a predisposing factor to hemorrhage. The symptoms of the intracranial hemorrhages vary greatly, only in exceptional cases is it possible to localize the hemorrhage exactly. The treatment of intracranial hemorrhages should be symptomatic. It has not been definitely demonstrated whether the intracranial hemorrhages play a part in the development of diseases of the nervous system during later childhood.

Strahlentherapie, Berlin

56 361 540 (July 18) 1936 Partial Index

- Roentgen Treatment of Esophageal Carcinoma A Bernstein—p 366
Near Roentgen Irradiation of Surgically Exposed Rectal Carcinomas H Chaoui—p 377
Radium Treatment of Cervical Carcinoma with Aid of Exteriorization of Small Pelvis. F Daels—p 380
Roentgen Treatment of Lymphoblastic Sarcomas R Gauducheau—p 407
Method of Irradiation of Cervical Carcinoma with High Voltage Apparatus Gunsett—p 422
*Roentgen Treatment of Actinomycosis S Keijser—p 449
*Treatment and Prognosis of Leukemias Particularly the Favorable Results in Lymphatic Leukemia Involving Only the Spleen I Solomon—p 526

Roentgen Treatment of Actinomycosis—According to Keijser, roentgen treatment is the method of choice in actinomycosis. He employed it in 101 cases in which the diagnosis had been microscopically verified. According to the localization of the lesion, he differentiates (1) the cervicofacial inclusive of the cutaneous actinomycosis (2) the abdominal and (3) the thoracic and other rare localizations. In his material the cervicofacial form was the most frequent (69 per cent). In this form he obtained especially favorable results with a combination of roentgen treatment and of medication with potassium iodide. The potassium iodide was usually administered in daily doses of 6 Gm. Incisions were made only in cases of abscess formation. Greater surgical interventions could be avoided. The number and size of the fields for irradiation as well as the focus-skin distance were individualized according to the extension and the localization of the lesion. Whenever possible, the disease focus was attacked from two or three sides. By the tangential direction of the rays, it was possible to protect the deeper living tissues to a considerable extent. To be sure in some cases, the irradiation of the deeper tissues could not be avoided but even in these cases the author observed no injurious effects. The aim was always the homogeneous irradiation of the entire diseased area with from 75 to 85 per cent of the unit skin dose. The filter consisted of 0.5 mm of copper and the tension was from 170 to 180 kilovolts. The depth action was adjusted by varying the focus skin distance. This distance varied between 30 and 60 cm. In about 50 per cent of the patients a single series of irradiations was sufficient. If, after six or eight weeks, the improvement was not considerable a new series was given. A third and fourth series became necessary in only a few of the cases. The combination roentgen and iodine treatment was successful in sixty seven out of the sixty nine cases with cervicofacial actinomycosis. The other two patients died. Of twenty-seven patients with an abdominal localization of the disorder nine were cured. In some cases the author resorted to injections with fuadin and he thinks that the fuadin treatment of actinomycosis deserves further attention.

Roentgen Treatment of the Leukemias—Solomon points out that in spite of the comparatively imperfect technique in the earlier years of the roentgen era favorable results of roentgeno-

therapy of leukemias were nevertheless reported as early as 1903 and 1905. However, the favorable results were only temporary although the patients appeared healthy at first and were able to work again, there usually was a relapse after a short time. Renewed irradiations were usually not as effective as the first ones had been, and finally the disease became entirely refractory to rays. However, with the improvements in the roentgen technic, particularly with the harder rays and the more exact dosimetry, the number of entirely refractory cases of leukemia became lessened, although the ultimate prognosis seems not to have improved. The author shows that certain complications of leukemia likewise yield to roentgen therapy. He cites favorable results in leukemic priapism that had proved refractory to other measures and states that the albuminuria of patients with leukemia is responsive to roentgen irradiation. In view of the favorable effects of roentgen treatment on the leukemic albuminuria, it has been suggested that the kidneys be given a systematic irradiation before beginning the treatment of the spleen, bone marrow and glands. In some of the cases that were treated in this manner, the results seem to be better than before this method was adopted. Nearly all authors who employ roentgen treatment have abandoned the larger doses as well as the so-called intensive method and have returned to fractionation and irradiation in series. The number of series and the length of the intervals between them are determined on the basis of the blood status. The author points out that some authors have ascribed the refractoriness to treatment during the later stages of leukemia to the fact that local irradiation is insufficient. Consequently, they have attempted to add general to the local irradiations. However, it was found that the total irradiation likewise failed to effect a permanent cure. Nevertheless, it has certain advantages and is particularly advisable in cases which have such a multiplicity of foci that a local treatment is impossible. It can also be tried in cases in which the local treatment fails. The author calls attention to the comparatively rare form of lymphatic leukemia that is restricted to the spleen. He gives detailed histories of two such cases, in which roentgen irradiation proved especially valuable. The two cases are noteworthy for long survival and for the return to normal on the part of the blood picture.

Wiener klinische Wochenschrift, Vienna

35 1061 1084 (Aug 28) 1936

- Hypothalamus and Central Nervous Regulation of Blood Pressure A van Bogaert—p 1061
Anatomic Foundations for Treatment of Thrombosis of Pelvic Veins and of Femoral Vein E Friedlander—p 1067
Changes in Psychotherapy W Stekel—p 1071
*Changes in Metabolic Conditions of Diabetic Patients in Presence of Malignant Tumors Cornelia Wetzler Ligeti and Maria Kostenblatt—p 1074
Gynecomastia and Cirrhosis of Liver Case R Riebler—p 1076
Isolated Bilateral Lesion of Superior Cervical Ganglion Case K Kahn—p 1077

Metabolism of Diabetic Patients Having Malignant Tumors—Wetzler-Ligeti and Kostenblatt cite investigators who observed that the glycosuria of diabetic patients decreases when a malignant tumor develops and that the sugar content of the blood is increased in patients with carcinoma. They state that they themselves investigated the sugar content of the blood of twenty patients with carcinoma and found thirteen with hyperglycemia, although neither the patients themselves nor their families gave a history of diabetes. The authors also call attention to the fact that several investigators made the observation that in sugar tolerance tests the blood sugar curves of carcinoma patients resemble those of diabetic patients. They themselves observed in the course of several years on a large material of diabetic patients that, if a diabetic patient develops a malignant tumor the glycosuria disappears while the glycemia remains comparatively high. They made this observation in eleven cases. It appeared that the site of the tumor was of no importance. The authors' material consisted of one pulmonary tumor, one ovarian carcinoma, one hypernephroma, one carcinoma each of the colon and of the gallbladder and three carcinomas each of the stomach and of the pancreas. In discussing the pathogenesis of the disordered carbohydrate metabolism in patients with malignant tumors the authors suggest that a disturbance in the oxygen supply of the organism might play a part.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

36 323 644 (Nos 143 144) 1936 Partial Index

- Extreme Types of Variants of Venous System Their Genesis V N Shevkunenko and A N Maksimenkov—p 380
- New Orientation in Treatment and Prophylaxis of Inflammatory Processes A V Vishnevskiy—p 386
- Cancer of Tongue Its Treatment N N Petrov—p 411
- Gastric Cancer Considered from Surgical Point of View A Melnikov and V Mikhedko—p 425
- *Treatment of Severe Gastroduodenal Hemorrhage A M Zabludovskiy and B P Abramson—p 472
- Operation for Cancer of the Rectum Without Formation of Ilia Anus S I Spasokukotskiy—p 489

Treatment of Gastroduodenal Hemorrhage—According to Zabludovskiy and Abramson, severe hemorrhage from gastric or duodenal ulcer occurs with much greater frequency in the male patients than in the female. Of the twenty-five cases treated by them, twenty-one were in male patients. They urge that patients be referred to the surgical service at the first signs of bleeding rather than in the stage of a life-threatening hemorrhage. Direct evidence of bleeding, such as a tarry stool or blood in the vomitus may be absent. These signs are not infrequently preceded by a general weakness to the point of fainting, pallor and a weak pulse. There is a tendency to recurrence on the part of those who had one severe hemorrhage. The authors therefore feel that in the presence of definite evidence of ulceration such patients should be submitted to an operative intervention during the quiescent period. In their experience blood transfusion proved to be the most effective means of arresting gastric or duodenal bleeding. It should, however, be given in the early stage and not as a last resort. Patients rendered acutely anemic are poor surgical risks. They can, however be saved as a rule, by a transfusion of from 150 to 200 cc of blood. Fresh or preserved blood was more efficacious than plasma. The aim of transfusing small quantities of blood is to arrest bleeding rather than to treat the acute anemia. The latter is to be met by a transfusion of from 350 to 400 cc. of blood not earlier than from ten to fourteen days after the arrest of the hemorrhage in order to avoid raising the blood pressure. Blood transfusion, however, is not invariably successful. A certain number of patients, particularly those bleeding from a large callous ulcer, will bleed to death. The older patients exhibit less tendency to stop bleeding than the young, presumably because of sclerotic changes in their blood vessels. Operative indication therefore, is more common in patients past the age of 40. Palliative operations, such as ligation of afferent blood vessels suture of the ulcer and cauterization of the ulcer are not effective, and least of all is the operation of gastro enterostomy. Though hazardous for the patient, the most effective procedure is partial gastric resection. The latter must always be preceded by a transfusion of from 350 to 400 cc of blood. The most important element in the treatment is the correct estimation of the limitations of the conservative treatment (blood transfusion) and the timely choice for operative intervention.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

80 3989-4108 (Sept 5) 1936

- Diagnosis and Treatment of Some Bladder Disorders W F Suermondt—p 3990
- Is Gastric Ulcer Increasing? E Hammer—p 3997
- *Symmetrical Arthropathies in Addison's Disease J C J Burkens—p 4005
- Hereditary Factors Determining the Predisposition to Mammary Cancer in the Mouse R Korteweg—p 4008
- Clinical Significance of Electrocardiogram in Hypertension C L C van Nieuwenhuizen and H A P Hartog—p 4015

Symmetrical Arthropathies in Addison's Disease—Burkens reports that although patients suffering from Addison's disease often complain of arthralgias and neuralgias it is practically never possible to find disturbances of the joints such as limitation of movement or crepitation and the roentgenograms seem to be normal. Curschmann's is the only known communication that describes four cases in which objective disturbances were found. The author gives the histories of three patients with Addison's disease who had also pulmonary tuberculosis and of whom the first presented calcification of the adrenals and progressive symmetrical omiarthritis with severe limitation of shoulder movements the second showed progressive and symmetrical omiarthritis coxarthrosis and gonarthrosis with severe limitation of movements of these joints and

the third had progressive and symmetrical inflammation of the shoulder and elbow joints with severe limitation of movement of these joints. All patients presented some degree of atrophy of the muscles connected with the interested joints. The roentgenogram recalled that of rheumatoid arthritis. Periarthritis was present in high degree. The occurrence and simultaneous development of these disturbances with Addison's disease and their symmetrical character make it extremely probable that this is no coincidence but that there is a relation of cause to effect between Addison's disease and this kind of arthropathy.

Hospitalstidende, Copenhagen

79 757 784 (July 28) 1936

- Postoperative Tetany A Lachmann—p 757
- Exogenic Etiologic Factors in Manic Depressive Psychosis with Especial Reference to Chronic Epidemic Encephalitis P Dickmeiss—p 764
- *Monilethrix (Aplasia Piliorm Intermittens or Moriliforme) E. Gottlieb—p 781

Monilethrix—Gottlieb describes four cases, in siblings aged from 10 to 21, otherwise apparently normal both physically and mentally. The anomaly, in more or less marked degree, has been traced back through five generations of the family and seems to be transmitted as a dominant characteristic. He says that, according to van Leeuwen and others, the new hair which appears after roentgen epilation or epilation with thallium is normal at the start and by repeated roentgen epilation after the hair has again become deformed a somewhat longer effect has been maintained each time.

79 813 840 (Aug 11) 1936

- Periarthritis of Humerus H Buch—p 815
- *Primary Pulmonary Carcinomas E B Vosbein—p 827
- Changes in Cerebrospinal Fluid in Psoriasis and Normal Values for Albumin Content of Cerebrospinal Fluid A V Neel—p 836

Primary Pulmonary Carcinomas—Vosbein tabulates the cases of six men and eleven women who were treated at the Aarhus district hospital from 1920 to 1935. An increase in the number of cases during the last five years is noted. In eleven of the thirteen cases in which necropsy was done there was a tumor of nodular massive form, in four cases believed to have originated from the main bronchus, in two from the large bronchi and in five with uncertain point of origin, in two cases there were tumors of disseminated medullary form. Microscopic examination in eight cases showed typical bronchial carcinoma. Sooner or later in the course all the patients had pulmonary symptoms. The duration of the disease was from one and a half months to two and a half years, or an average of nine months.

Ugeskrift for Læger, Copenhagen

98 755 776 (Aug 13) 1936

- Urethral Resection of Prostate Without Electricity I Collin—p 755
- Pathogenesis of Hysterical Cutaneous Disturbances H Haxthausen—p 758
- *Lymphogranulomatosis (Sternberg) O Raagaard—p 759
- Serodiagnosis of Syphilis in Primary and Secondary Stage M Jerrill—p 765

Lymphogranulomatosis—Of Raagaard's nineteen cases in which treatment has been given since 1922, eighteen were verified histologically. There were twelve male and seven female patients aged from 11 to 62. In fifteen patients the duration from histologic diagnosis to death was from one to sixty-four months or an average of about sixteen months. All the patients had a chronic course. The primary localization seemed to be in the glands of the neck in seven in the axillary glands in three in the inguinal crural glands which, he says, is rare in three in the abdomen in two in the skin in one in the mediastinal glands in four and in the lungs in one. The glands of the neck were affected in all but one. Enlargement of the spleen was found in only four cases. Pain was a prominent symptom in the material. All the patients were given roentgen treatment of the affected region. Roentgen treatment is believed to be of great value in alleviating pain. In one of the three living patients a man aged 30 the duration of the disease has been six years. The disorder in this instance was mainly and has in the last years apparently been exclusively localized in the mediastinal glands. In spite of continued recurrences the effect of roentgen treatment seems undiminished. Close series appear to be more effective than more scattered treatment. The patient is now practically without subjective symptoms.

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THE ORGANIZATION OF A HOSPITAL LABORATORY

ARTHUR H. WELLS, M.D.
DULUTH, MINN.

Reduced salaries, raised census and higher collections have in many hospitals throughout the country created an optimism which has been reflected in a general trend toward an improvement of service. Boards of directors have come to rely on the medical staff for advice of a scientific nature. The time is most opportune for a general realization, especially by the older and more influential physicians, of the now developing possibilities. Many hospital laboratories may be anywhere from fifteen to twenty years behind without its staff fully appreciating this defect. It is hoped to set forth a conception of a modern, efficient, yet unpretentious laboratory for a hospital of moderate size, to serve as a measuring stick for institutions in a similar class.

As in other fields, the personnel of a laboratory is its principal limiting agent. It is conceivable, but unlikely, that a laboratory can be all that could be desired without the full time attention of a clinical pathologist. His reputation depends on what he produces in one institution. There are no outside business affairs or necessary social duties as are found in any part time arrangement. A moderate sized hospital will give him more work than he can possibly do to complete satisfaction. The increasing complexity of clinical pathology is such that the average physician cannot keep up with his own work and the advances in diagnostic aids offered by the laboratory. Consultation of the clinical pathologist on matters pertaining to the application and interpretation of laboratory tests is always available. His efforts will lend additional scientific life and character to the hospital and aid in making it the medical educational center of the community.

Technical assistants, properly selected and in sufficient numbers, are indispensable for the achievement of a smoothly functioning and continuously improving laboratory. Specialization of the technicians in various fields of their work is productive of a greater selection of laboratory tests and a more dependable accuracy. The responsibility for the development and functioning of a department of the laboratory will bring out the best in an ambitious technician.

There is a limit to the amount of practical apparatus necessary in a laboratory. Consolation may also be had in the fact that the more expensive pieces have a long and useful life. Frequently a single instrument will be the key to a large field of diagnostic aids.

A flat rate laboratory fee which includes all but a few of the more expensive tests is of the greatest

importance. No patient should be deprived of the benefits of any laboratory aid. Once the physician realizes that there will be no additional financial burden for his patient, he will feel free to order desirable tests. Rarely is the laboratory imposed on. Routine complete blood count, urinalysis, and tests for syphilis run on all hospital admissions will justify the flat rate fee in any case.

Lack of training, ability or apparatus should be no excuse for not rendering dependable reports as desired on tests of a proved diagnostic value. This is the laboratory's first function. However, the mark of distinction of a laboratory is its accomplishments in the field of research. An efficient "routine" laboratory would fall far short of the ideal.

In the following description of a laboratory, the development of each reorganized department is revealed through a summary of the reports that have been presented to its medical staff.

DEPARTMENT OF PATHOLOGY

Necropsies—A constant effort is being made to prove the value of necropsies to physicians and interns in the hope of further developing the benefits derived from this most important branch of scientific medicine. One measure of the success of these efforts is the present average of over 80 per cent necropsies on hospital deaths. Attending physicians are being consulted as to the convenient time for performing necropsies, or, if they cannot be present, they may point out peculiarities of the case. The percentage of permissions for necropsies granted interns and their attendance at the examinations are being posted in the morgue. Nurses are encouraged to be present. A routine discussion of the history, physical examination, progress and therapy of the deceased precede each necropsy and there is a constant correlation of clinical and pathologic aspects of the case during the examination. With the necessary additions to a morgue, careful bacteriologic studies can be made without waste of time or effort. Biochemical and biologic tests can be run where indicated. Special preparation and staining of tissues is important. The stains thus far developed in this laboratory are phosphotungstic acid, hematoxylin and eosin, Mallory's eosin methylene blue, Brown-Breen's (Gram's), acid fast thionine, sudan III, Best's glucose cresyl violet, osmic acid, iron, Levaditi's spirochete and Foot's silver stains. There is on hand a sufficient amount of glassware, crocks and chemicals, so that a minimum of time is required for preserving interesting specimens. Photographs and x-ray examinations are being made in all cases where indicated.

Necropsy reports include a gross and microscopic description and, when pertinent, a brief discussion and correlation of the clinical and pathologic observations. These reports are finished within two weeks unless haste is requested or indicated, and then they may be

finished in three days. Records are sent to the attending and consulting physicians. One report is kept on the chart and another in the laboratory office. A cross index of these anatomic diagnoses is filed in the laboratory office to facilitate future investigation. Outpatient necropsies are being done without charge except for medicolegal cases. A comparison of necropsy and clinical diagnoses is being prepared and shown on a lantern slide at each monthly staff meeting. The combined errors of many physicians revealed in this way is the most effective argument for necropsies known. Another part of the mortality and morbidity report is the presentation of any outstanding case studied in the hospital during the previous month.

St. Luke's Hospital Laboratory Special Blood Report

Name Case No.	Date Service
1 RED BLOOD CELLS	
a Number per cmm —	
b Size in stained preparation —	
c Shape in stained preparation —	
d Color in stained preparation —	
e Regeneration forms	
(1) Nucleated red cells —	
(2) Basophilla punctuate or diffuse —	
(3) Nuclear particles	
(4) Megaloblasts	
f Fragility hemolysis begins in	% complete in
chloride	(control %)
g Reticulocytes —	%
2 VOLUME OF PACKED RED BLOOD CELLS % of normal (cc per 100 cc)	
3 VOLUME INDEX	
4 HEMOGLOBIN % of normal	Gm per 100 cc with H H hemo
globinometer	
5 COLOR INDEX	
6 SATURATION INDEX	
7 WHITE BLOOD CELLS	
a Number per cmm —	
b Differential count	
Neutrophils — %	Eosinophils — %
Lymphocytes — %	Monocytes — %
Basophils — %	
Nonfilamented neutrophils — % of 100 white cells	
(normal 6-16%)	
Nonfilamented neutrophils — % of 100 neutrophils	
(normal 15-25%)	
Basophilic (toxic) granulation —	
c Presence of abnormal forms	
(1) Myelocytes	(3) Lymphoblasts
(2) Myeloblasts	(4) Fragile leukocytes
d Supravital staining	
8 BILF PIGMENTS IN PLASMA	
a Icterus index	(Normal 4 to 6)
b Units (Van den Bergh)	per 100 cc (Normal 0.5 to 2 units)
9 PLATELETS	per cmm
10 COAGULATION TIME	14 CLOT RETRACTION
11 BLEEDING TIME	15 SEDIMENTATION TEST
12 PROTHROMBIN TIME	16 BLOOD TYPE
13 CALCIUM TIME	17 MISCELLANEOUS
18 BONE MARROW DIFFERENTIAL COUNT (REVERSE SIDE)	
19 LABORATORY DIAGNOSIS	
Pathologist	

Surgical Tissues — Routine gross descriptions are being made on all tissues removed at operation, and microscopic descriptions of paraffin sections are being made on all tissues except such structures as old scars, hernial sacs, normal ribs and tonsils, unless they are requested. A diagnosis by frozen section will be attempted at any time. Paraffin section preparations can be had in five hours. Routine paraffin sections are reported on by the third postoperative day or earlier if desired. Special stains, biologic tests and bacteriologic studies are used when appropriate.

An honest description of each tissue is being made, its source being designated rather than it being diagnosed as "normal." Thus it is hoped to avoid any remote possibility of legal complications. For example, if an appendix has a horseshoe shape, more lympho-

cytes than usual in the mucosa or an unusually thin wall, and yet shows no microscopic active inflammatory process, the variations will be described and the diagnosis "Appendix" will be made. With the surgeon's clinical diagnosis at the top of the report, prying eyes of those less informed will be satisfied.

A copy of the report is sent to the surgeon, one kept in the laboratory, and another put on the chart. The paraffin sections and blocks form permanent record. Unusually interesting specimens are saved for a museum. Others are being thrown out after a month until we have sufficient space and glassware to save all tissues.

DEPARTMENT OF HEMATOLOGY

A hematology department may be sadly neglected or it may follow closely the continuous advancements in the field. As a basis of our work in the study of blood we have adopted a detailed report sheet patterned after that of Dr. Russell Haden of Cleveland (see "Special Blood Report" sheet). This is to be used for complete blood studies in cases with symptoms suggestive of blood dyscrasias.

In the interest of greater efficiency and economy in this department, the hospital has provided an excellent pipet shaking machine, Dr. Marble's differential blood counting machine, a Haden-Hausser hemoglobinometer and a binocular microscope.

Grams of hemoglobin per hundred cubic centimeter of blood is reported, as well as the usual percentage of normal. There is such a variation in the percentage of hemoglobin as determined by the several methods in common use that it would be well for physicians to become accustomed to the common basic figure expressed in grams. We are saving data on normal individuals living in this northern community and will arrive at a local relationship between grams of hemoglobin and percentage of normal.

All differential counts list neutrophils in two groups: nonsegmented and segmented. The differential blood counter makes this a simple procedure, which may become a distinct asset to some physicians. All differential counts are done on cover slip preparations so as to obtain a uniform distribution of the white blood cells.

The recently widely proved value of bone marrow studies leads me to believe that they will soon be used as a routine in certain types of cases. We have just recently proved that a patient with a normal white count was in an aleukemic phase of leukemia. Special bone marrow preparations are being made from all necropsies, and clinical studies are encouraged.

DEPARTMENT OF BACTERIOLOGY AND SEROLOGY

Bacteriology has possibly been neglected more than any other phase of laboratory work in hospitals of moderate size. With the cooperation of the hospital we are now equipped to identify by approved methods almost any pathogenic organism.

Certain pieces of apparatus may need a brief description. Our Seitz microfilter makes it possible to isolate or work with bacteriophage, to prepare asthma and hay fever vaccines, and to study the field of filtrable viruses whenever the occasion arises. A potentiometer makes the preparation of mediums from raw material a controlled process. It is an indispensable and efficient means for accurate hydrogen ion determinations in blood and other body fluids and in certain experimental fields, especially bacteriology.

Instead of the laborious and occasionally failing method of perpetuating the many cultures used in a

modern bacteriologic laboratory by frequent subculturing, we are now using the recently discovered method of creating what might be called artificial spores of any organism. This is done by rapidly dehydrating them in a high vacuum with a special pump. The dried organisms can be kept sealed in a desk drawer for eight months or more. Preservation and concentration of antisera or complement is made possible by this method. It also introduces a new field of bacteriology as the cultures retain their virulence and original culture characteristics, enabling one to save many strains of various organisms for comparative group studies.

To give some idea of the variety of available tests and possibly some practical suggestions, a list of bacteriologic and immunologic tests will be cited. Recent improved methods for the culture diagnosis of gonorrhea have proved more accurate than the simple morphologic study of smears. A three-hour mouse method has proved quite reliable for pneumococcus typing, and we soon hope to identify all types for which there are antisera on the market. The growth of *Brucella abortus*, *Brucella melitensis*, *Brucella suis*, *Pasteurella tularensis*, *Neisseria gonorrhoeae*, and certain strains of streptococci is enhanced greatly by an atmosphere of carbon dioxide. Carriers of the organisms of typhoid epidemic meningitis and diphtheria may be located among the patient's contacts. The virulence of diphtheria-like bacilli can be tested. The determinations of total bacterial counts tests for sewage pollution, and the identification of food poisoning organisms in water and food products may become imperative in any community. Methods for the demonstration of Rickettsia bodies, the virus of psittacosis, *Leptospira icterohaemorrhagiae*, *Spirochaeta pallida*, *Bacillus anthracis*, *Clostridium botulinum*, *Haemophilus influenzae*, the organisms of gas gangrene and certain pathogenic fungi are ready for use.

Certain serologic tests may prove of practical value. Controlled agglutination tests with antigens made of *Eberthella typhi*, *Salmonella paratyphi*, *Brucella abortus*, *Brucella melitensis*, *Pasteurella tularensis*, strains Shiga, Flexner and Hiss-y of *Endamoeba dysenteriae* and *Bacillus proteus* X19 will be reported after overnight incubation. Seven cases of infectious mononucleosis have been diagnosed or the diagnosis confirmed during the last two months by using the heterophile antibody test. Frei's antigen skin test made a clinical diagnosis of lymphogranuloma inguinale a certainty. A greater use of the bacteriocytophagic index and skin tests for brucellosis is encouraged. Autogenous vaccines can be prepared in from two to seven days.

We are running the Kahn and Kline tests on all cross matched blood donors. These or other recognized tests should also be run in a routine way in all hospital admissions.

DEPARTMENT OF CHEMISTRY

The personal factor of error has recently been almost eliminated in two important pieces of apparatus used in chemistry. The photometer electrically measures the intensity of light passing through the variously colored solutions previously compared in a colorimeter. A magnetic damper on any gravimetric balance will eliminate the time consuming and difficult calculation of the zero point.

The wide variety of chemical analyses being run in this laboratory include serum albumin, globulin and fibrinogen, blood calcium, phosphorus, iodine, bromide, chloride, methemoglobin, carbon dioxide capacity, and

hydrogen ion concentration. Spinal fluid proteins, dextrose and chlorides may be ordered. Liver function tests include blood cholesterol and cholesterol esters, bromsulfalein excretion, galactose tolerance, urobilinogen in the stool and urine, Van den Bergh's quantitative test and the icterus index. Kidney function tests include the Van Slyke urea clearance, phenolsulfonphthalein excretion, Mosenthal's and Volhard's specific gravity tests, urea excretion, quantitative urinary albumin, and the quantitative determination of various protein metabolites in the blood.

All emergency chemical tests are run when ordered while routine requests are being run at 10 a. m. and 4 p. m. daily. Urinalyses are being run at 7 and 10 o'clock in the morning and 4 and 6 in the afternoon.

In toxicology we are prepared to run tests for the demonstration of the heavy metals, alkaloids, certain volatile oils and inorganic compounds. This part of the laboratory has been neglected even in many medical schools. However, a lack of training, ability or apparatus should not interfere with the isolation and identification of the more common poisons. We hope in the future to present to the staff a complete list of the poisons which we have proved our ability to identify.

TEACHING AND RESEARCH

I would like to call attention to a most important phase of laboratory work. Ideally, the pathologist should spend half of his time developing the many details of the experimental and teaching duties of his specialty. The various teaching aspects of necropsy work have already been dealt with. The continuous correlation of clinical and pathologic observations at necropsies, the permanent preservation of tissues of unusual interest, the preparation of a museum, and the frequent recording of pathologic processes by gross and microscopic photography and other methods need not be reiterated. For those interested, an opportunity to review their anatomy is being offered in the morgue in the form of group demonstrations. Staff members so requesting are notified a few hours in advance.

A clinical pathologic conference should be a part of the routine of every well organized laboratory. The benefits derived from these sessions depends greatly on the preparation of its individual participants. I might venture that no one thing has been more beneficial to the physicians of Duluth than the conferences conducted weekly during the last ten years by Drs. E. L. Tuohy and G. L. Berdez at St. Mary's Hospital. An abundance of instructive material is wasted as far as its immediate and very important application is concerned without this outlet.

It would seem that interns in many hospitals were once burdened by all the laboratory work. When the advantages of employing technicians became known, the pendulum swung, in many places, to the other extreme, so that a gesture at laboratory training became sufficient. Our intern committee has arranged for a minimum of training in this field based on several important requisites. There should be a sufficient variety and quantity of laboratory procedures for which the intern should be given full responsibility. He should not be permitted to shift his work on a technician, and there should be no interference with the laboratory's efficiency or accuracy. We feel that this has been brought about by having two interns do all the tests ordered every third Sunday under the direct supervision of a technician and the pathologist. They also have certain laboratory duties involving those

patients on their individual services, besides performing the night laboratory tests. Their attendance and assistance at necropsies is important, and the supervised complete performance of at least one examination is a minimum requirement. An intern's weekly conference provides further clinical and pathologic training.

A training school for laboratory technicians has been opened, which is planned to fulfil the requirements of the Council on Medical Education and Hospitals of the American Medical Association for acceptable schools for laboratory technicians. The number of students is strictly limited to one for each of the four teachers, and they rotate twice through the four departments during their fifteen months of training. The many assets to a laboratory offered by student technicians will not be entered on here.

The knowledge of fundamental gross and microscopic pathology in the more common disease processes would seem to be a minimum objective in the teaching of nurses. To this end, a twenty-hour lecture and demonstration course is being given by the pathologist. Nurses are being encouraged to attend necropsies at which they are treated with special consideration. It is believed that as more people become familiar with the value and procedures of necropsies there will be less obstruction encountered in this field. Ignorance, mystery and bigotry thwart progress.

A comprehensive lecture on postmortem examinations was recently given before a regional meeting of the Society of Morticians. The pathologist may be used to some advantage before other lay groups talking on medical subjects.

All the current medical journals received for the hospital's general library pass over the pathologist's desk before entering the library. One duty of the pathologist is to know of the important developments in all fields of medicine, and especially those having to do with diagnostic procedures. To this end a cross index of all such articles is being kept, and a diagnostic reference library is being developed in the laboratory office. The hospital has been quite liberal in permitting the pathologist to attend important medical meetings in other cities, which is an asset to any laboratory.

A spacious and well equipped animal house on the roof of the hospital makes animal work possible at any time. Interest in animal surgery or experimentation is welcomed. A variety of animals is being raised for this and other purposes. The hospital has offered the opportunity, there remains the necessity of time, ambition, imagination and interest on the part of the physician.

Assistance can be offered the pathologist by collaboration in experimental fields or by the editing of papers. It will suffice to list a few of the problems now being actively investigated in our laboratory: studies of bone marrow from all necropsies, comparison of retinal, cerebral coronary and renal arteries from necropsies, development of a precipitation test for infectious mononucleosis, demonstration of the etiologic agent of infectious mononucleosis, investigation of the value of the Gordon test, performance of anaerobic cultures of the uterine cavity in cases of abortion, studies of endometrium in cases of metrorrhagia, development of a rapid, simple and practical office method of determining blood sugar, determination of the histogenesis of papillomatosis peritonei, routine studies of the hydrogen ion concentration of spinal fluid, comparison of

liver function tests, the quantitative determination of silica in the lungs, special preparations for the study of the cytology of transudates and exudates, determination of the regional relationship of grams of hemoglobin and percentage of normal, the preservation of non-pathogenic, acid fast bacilli, organisms producing green pigment, bacilli of gangrene, and other bacteria for future group studies, and the preparation of several case studies.

SUMMARY

The actual development of a hospital laboratory has been described in the form of summarized reports to its medical staff. Sufficient indication of the variety of diagnostic aids offered by each department is given to define its limits of usefulness in a hospital of moderate size. Staff physicians are ultimately responsible for the development of their hospital laboratory. It would be well for them to appreciate fully its possibilities especially during the present trend toward improvement of services in many hospitals throughout the country.

THE TAKATA-ARA TEST AND ITS RELATION TO CIRRHOSIS OF THE LIVER

ROBERT C. KIRK, M.D.

NEW YORK

Clinicians everywhere are anxiously and hopefully awaiting a liver function test that will be of definite diagnostic value. The recent appearance of several American papers on a new test of liver function, the Takata-Ara test, in which it was concluded that a distinct differentiation, on the basis of this test could be made between carcinoma and cirrhosis of the liver stimulated the present investigation.

This reaction was originally described by Takata¹ who used it to differentiate lobar pneumonia from bronchopneumonia. He found that when fluid from the chest of a patient with lobar pneumonia was added to a solution of sodium carbonate, mercury bichloride and acid fuchsin, a precipitate of mercury oxy-sol occurred. He believed that this precipitate was due to decreased stability of the serum proteins, produced essentially by an increase in the globulin fraction. Later Takata in collaboration with Ara² reported on the reaction in cerebrospinal fluid. It seemed to differentiate between syphilitic and meningitic involvement of the central nervous system. Daffinee and Grzebiemowski,³ Cameron and McCulloch⁴ and Monias⁵ have all reported favorably on this spinal fluid test. Jezler⁶ employed the test on the serum and ascitic fluid in liver disease recognizing that a protein shift in the blood was not peculiar to lobar pneumonia. It was found to be positive in the serum and ascitic fluid in nearly all advanced cases.

From the Department of Internal Medicine, Yale University Medical School and the New Haven Hospital, New Haven, Conn.

¹ Takata, Maki. Ueber eine Kolloidchemische Serum-Reaktion bei Lungenerkrankung. Tr. 6th Congress Far Eastern Assoc. Med. 1: 693-699, 1925.

² Takata, Maki and Ara, Kiyoshi. Ueber eine neue kolloidchemische Serumreaktion und ihre praktischen Ergebnisse. Tr. 6th Congress Far Eastern Assoc. Med. 1: 667-671, 1925.

³ Daffinee, R. W. and Grzebiemowski, L. E. F. The Takata-Ara Test on Spinal Fluid. New England J. Med. 205: 12-7 (11) 1931.

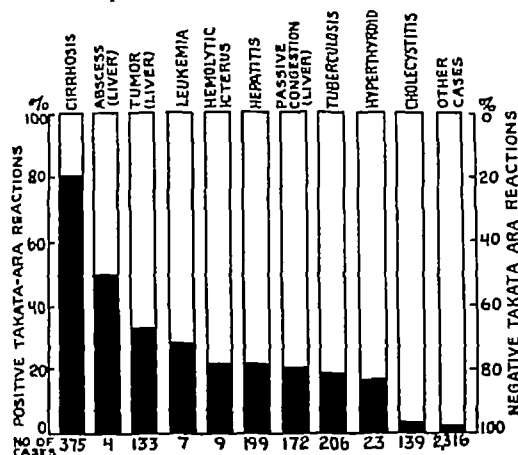
⁴ Cameron, D. E. and McCulloch, R. The Takata-Ara Test. Cerebrospinal Fluid. Canad. M. A. J. 23: 557 (Oct.) 1930.

⁵ Monias, B. L. The Clinical Value of the Spinal Fluid. Takata and Ara. J. Lab. & Clin. Med. 14: 67-70 (Oct.) 1932.

⁶ Jezler, Adolph. Die Takatasche Kolloidreaktion in Serum, Harn, Korperflüssigkeiten und ihre Beziehungen zu Störungen der Eiweißwechsel der Leber. Zt. f. klin. Med. 111: 757-758, 1931.

of cirrhosis and usually negative in all other diseases, including cholelithiasis and carcinoma of the liver

The literature contains numerous articles of a similar nature. The data from those of Oliva and Pescoroma,⁷ Magath,⁸ Ragins,⁹ Neuweiler,¹⁰ Schindel and Barth,¹¹ Lazzaro,¹² Skouge,¹³ Crane,¹⁴ Heath and King,¹⁵ Hugonot and Sohler,¹⁶ Oefelein,¹⁷ and Hafström¹⁸ have been tabulated and presented in the accompanying chart



Positive and negative Takata Ara reactions compiled from the literature

METHOD

The method employed was that described by Jezler with modifications after Crane.¹⁴ One cubic centimeter of a 0.9 per cent solution of sodium chloride was pipetted into each of six small test tubes (agglutination tubes are very satisfactory). One cubic centimeter of the patient's serum was added to the first tube. One cubic centimeter of the patient's serum and saline solution well mixed was pipetted into tube 2 and the procedure continued until dilutions from 1:2 to 1:64 were obtained. The final cubic centimeter was thrown away. To each tube 0.25 cc of a 10 per cent solution of sodium carbonate was added, followed by 0.15 cc of 0.5 per cent mercury bichloride. The tubes were then shaken and were read in five minutes and again in twenty-four hours. A pearly flocculent precipitate filling at least one fourth of any tube and a definite precipitate in any of the first four tubes is considered

- 7 Oliva G and Pescoroma M. The Takata Ara Reaction in Hepatic Diseases. *Minerva Med* 2:12 (July 7) 1933. *abstr Chem Abstr* 27:4578 1933.
- 8 Magath T B. The Takata Ara Test of Liver Function. *Proc Staff Meet. Mayo Clin* 10:493-496 (July 31) 1935.
- 9 Ragins A B. The Value of the Takata and Ara Reaction as a Diagnostic and Prognostic Aid in Cirrhosis of the Liver. *J Lab & Clin Med* 20:902-913 (June) 1935.
- 10 Neuweiler W. Takatasche Reaktion und Schwangerschaftstoxikose. *Klin Wchnschr* 40:1428-1429 (Oct. 6) 1934.
- 11 Schindel L and Barth E. Die Bedeutung der Takata Reaktion für die Diagnose der Leberkrankungen in ihrem Verhältnis zur Galaktose und Bilirubin Belastung. *Klin Wchnschr* 13:1332-1335 (Sept 15) 1935.
- 12 Lazzaro G. Takata Ara Test in Serum and Aseptic Fluid of Dis-eases of the Liver. *Polichinico (sez med)* 41:144-152 (March 1) 1934. *abstr J A M A* 102:1648 (May 12) 1934.
- 13 Skouge E. Der Wert der Takata Ara Reaktion unter der Koagulationsbestimmung bei Leberkrankheiten. *Klin. Wchnschr* 12:905-906 (June 10) 1933.
- 14 Crane M P. A Modified Mercury Bichloride (Takata Ara) Reaction in Cirrhosis and Neoplasms of the Liver. *Am. J. M. Sc* 187:405-411 (May) 1934.
- 15 Heath C and King E. The Takata Ara Test in the Diagnosis of Liver Disease. *New England J. Med.* 211:1077-1081 (Dec 13) 1934.
- 16 Hugonot G and Sohler R. The Takata Ara Reaction Its Application as a Test of Liver Insufficiency. *Rev med chir d mal du foie* 9:5-38 (Jan Feb) 1934. *abstr J A M A* 102:2150 (June 23) 1934.
- 17 Oefelein F. Wirkungsmechanismus der Reaktion nach Takata Ara und ihre praktische Bedeutung als Leber Funktionsprüfung. *Klin. Wchnschr* 14:56-58 (Jan. 12) 1935.
- 18 Hafström Torsten. Takatas modifizierte Sublimatfuchsinreaktion am Blutsrum als Diagnostikum bei Leberkrankheiten. *Acta med. Scandinav* suppl 62:1935 pp 1160.

strongly positive. All other types of precipitate or lesser degrees of the pearly flocculent precipitate are considered negative. Heath's¹⁵ division of readings into five groups seems only to make interpretation difficult. Serum preserved at icebox temperature for a few days seems suitable for testing, but serum many weeks old gradually loses its precipitating properties. Slight amounts of hemolysis do not seem to alter the test. A bluish cloudiness or a brick reddish precipitate may be disregarded, as these occur occasionally in the reagents when mixed without serum. The results of the test are outlined in the tables to which reference will be made in the discussion.

RESULTS

In this series of 106 patients whose serums were tested, the clinical diagnosis was used as a basis for classification of the diseases and wherever possible was substantiated by postmortem examination or surgical biopsy. The cases are classified into twelve main groups (table 1).

In the twenty-one cases of clinical cirrhosis of the liver, diagnosis was based on a combination of several of the following: chronic alcoholism, hepatomegaly, splenomegaly, jaundice, ascites, hematemesis, esophageal varices, hyperchromic macrocytic anemia¹⁹ or shrunken liver.

The twelfth class includes all patients in whom no definite evidence of liver damage was present. In this group were seven positive and thirty-two negative

TABLE 1—Classification of Cases

Clinical Diagnosis	Takata Ara		No of Postmortem Examinations
	+	-	
Cirrhosis of liver	15	6	1 Diagnosis confirmed 0 No deaths during observation period
Congestive heart failure	7	7	4 All with marked passive congestion of liver 4 All with less marked passive congestion
Hepatitis	2	3	2 Marked central necrosis of liver 2 Less marked central necrosis of liver
Cholecystitis with cholelithiasis	3	0	0 (Operative removal)
Liver malignancy (metastatic)	3	2	1 Diagnosis confirmed 2 One with metastasis one with normal liver (carcinoma of rectum)
Abscess of liver	1	0	0 No deaths
Congenital hemolytic jaundice	2	2	0 No deaths 0 No deaths
Leukemia	1	1	1 Extensive leukemic infiltration of liver 1 Moderate liver cell necrosis
Tuberculosis	2	2	2 Extensive miliary infiltration of liver 2 Normal liver
Iobar pneumonia	1	4	1 Marked central necrosis of liver lobules 1 Marked central necrosis of liver lobules
Hyperthyroidism	4	0	0 One was icteric (20) no deaths
Miscellaneous	6	32	7 Normal livers microscopically
Total	59	67	36

Takata-Ara reactions. Four of the former were chronic alcoholic cases but presented no clinical evidence of liver disease. The latter thirty-two included seven patients with nephritis, six of whom died in uremia and two patients with multiple myeloma.

COMMENT

An attempt to correlate the Takata-Ara reaction with other liver function tests has been unsuccessful. Mann

19 Van Duyn John. Macrocytic Anemia in Disease of the Liver. *Arch Int Med* 52:839-851 (Dec) 1933.

and his co-workers²⁰ have shown that the functions of the liver vary more or less independently of one another and that disturbance of one function may be coincident with normality in the other. Yegge²¹ and Soffer²² agree that no single test can be of much value. Several authors²³ find no relation between the sedimentation rate, the galactose tolerance, the bilirubin tests and the Takata-Ara reaction. Tannenholz²⁴ found no relation between the actual Wassermann reaction and the Takata-Ara reaction but did obtain 15 per cent of positive reactions in his cases of syphilis. Analysis of his positive results shows that seven patients were jaundiced, two were chronic alcoholic addicts and three were decompensated cardiac patients, conditions which have already been shown to give positive Takata-Ara reactions. Ragins attributes his positive reactions in hyperthyroidism to liver damage, which Youmans and Warfield²⁵ and Weller²⁶ find in 50 per cent and 54 per cent respectively of such cases, as evidenced in the former's series by retention of the bromsulfalein and in the latter's series by autopsy. We have not had that experience in our clinic. Correlation with the icteric index has been almost unanimously unsuccessful.

EXPLANATION

The rationale of the Takata-Ara test is not well understood. It has been stated by Takata¹ and Jezler² that it is the decreased stability of the serum proteins of the colloid system that makes the precipitation of the colloidal solution of mercuric oxide possible and that this is due to an increase of globulin with inversion of the albumin-globulin ratio. Hugonot and Sohler¹⁰ found the Takata-Ara reaction to be positive in conditions usually brought about by severe hepatic disease, and also in protozoal infestations of the blood (kala-azar) in which a derangement of the blood proteins is found. They felt, however, that it was due to a diminution in the "protective" action of serum albumin. Ohya³ reached similar conclusions. Schindel²⁷ found that, by adding various concentrations of lower fatty acids (propionic and the like) to a serum which otherwise gave a negative Takata-Ara reaction, he could produce a positive Takata-Ara reaction. This confirmed experiments of Kallos-Deffner²⁸ and seemed of considerable significance to Greene, Bercovitz and Hansen²⁹. Recently Ucko³⁰ has criticized Schindel's statements on the justifiable grounds that the addition of fatty acids so alters the reaction of the tubes as no longer to meet the requirement of the Takata-Ara reaction. Zirm³¹ and others³² are able to inhibit flocculation by

the addition of small amounts of heparin to each tube but no explanation is offered. Schindel²⁷ and others³³ were unable to confirm Jezler's demonstration of reversed albumin-globulin ratios in serums which gave a positive Takata-Ara reaction.

That there is a definite relationship between a positive Takata-Ara reaction and an increase in the globulin fraction is the opinion of Jezler,² Lazzaro¹ and myself.

Snell³⁴ writes that it has been observed repeatedly that there is a moderate reduction in the total serum proteins in advanced chronic hepatic lesions, the diminution occurring chiefly in the albumin fraction with reversal of the albumin-globulin ratio. In less advanced cases the albumin may be only moderately reduced and the globulin may be normal or increased in amount. Peters and Eisenman³⁵ state that the albumin reduction may be due to malnutrition.

TABLE 2—Percentages of Albumin and Globulin in Positive and Negative Takata-Ara Reactions

Case No	Patient	Albumin	Globulin	Diagnosis	Comment
Positive Takata Ara Reaction					
1	Ar	2.77	9.40	Multiple myeloma	
2	No	1.52	5.18	Biliary cirrhosis	Autopsy diagnosis
3	Ma	2.70	9.00	Carcinoma of lung	
4	We	3.26	4.42	?Portal cirrhosis	
5	Go	3.50	4.26	Miliary tuberculosis	Autopsy diagnosis
6	Cu	2.57	4.25	Portal cirrhosis	Autopsy diagnosis
7	Pe	2.64	4.10	Portal cirrhosis	Autopsy diagnosis
8	Be	2.76	3.96	Portal cirrhosis	
9	Ca	2.80	3.69	Portal cirrhosis	Pt showed clinical improvement repeat globulin was 3.08 and T A R. became negative
10	Bl	2.80	3.60	Portal cirrhosis	Autopsy diagnosis
11	Co	2.59	3.35	Portal cirrhosis	
12	Mc	3.67	3.29	Portal cirrhosis	
13	Ga	3.07	3.25	Cardiac failure	
14	De	3.06	3.17	Portal cirrhosis	
15	My	2.80	3.17	Cardiac failure	Autopsy diagnosis
16	Ro	3.25	3.13	Portal cirrhosis	
17	Be	3.94	3.13	Cardiac failure	Autopsy diagnosis
18	Re	3.09	3.04	Cardiac failure	
19	Ma	2.44	3.00	Hepatitis	Autopsy diagnosis
20	Cl	3.37	2.16	Portal cirrhosis	Autopsy diagnosis
21	We	4.37	1.74	Portal cirrhosis	Autopsy diagnosis
22	Tr	2.46	1.67	Carcinomatosis of liver	
Average		3.00	3.71		
Negative Takata Ara Reaction					
1	Wl	3.71	3.08	Portal cirrhosis	
2-33		3.91	2.18	No clinical evidence of liver damage	
Average for 33 negative cases				No globulin over 3.00	

In an attempt to arrive at some answer to these questions, total serum proteins and fractions were determined in fifty-seven instances on fifty-six patients in this series. Total proteins in this laboratory³⁴ have a normal range from 6.8 per cent to 8.5 per cent. Wu³ obtained an average globulin figure of 2.09 per cent. Peters and Eisenman³⁵ using Howe's³ method in twenty-seven determinations on thirteen normal males obtained an average globulin of 1.89 per cent with a range of from 1.32 to 2.91 per cent. In females the average was somewhat higher—2.62 per cent with a range of from 2.02 to 3.22 per cent. On the basis of these normal figures the results in our cases were rather striking.

20 Mann F C and Magath T B Studies on the Physiology of the Liver. Effect of Removal of Liver on the Blood Sugar Level Arch Int Med 30 73-84 (July) 1922

21 Yegge W B Liver Function Tests Ann Int Med 8:907-919 (Feb.) 1935

22 Soffer L J Present Day Status of Liver Function Tests Medicine 14 185-255 (May) 1935

23 Schindel and Barth Ragins Heath and King

24 Tannenholz H The Takata Serum Reaction as a Diagnostic and Prognostic Aid in Syphilis and Dermatology Am J Syph 17 352-381 (July) 1933

25 Youmans J B and Warfield L M Liver Injury in Thyrotoxicosis as Evidenced by Decreased Functional Efficiency Arch Int Med 27 1-17 (Jan.) 1926

26 Weller C V Hepatic Pathology in Exophthalmic Goiter Ann Int Med 7 543-560 (Nov.) 1933

27 Schindel Leo Zum Mechanismus der Reaktion nach Takata Ara Klin Wchnschr 13 221-223 (Feb. 10) 1934

28 Kallos Deffner Takata Ara Reaction in Normal Conditions and Hepatic Diseases Studies on Rabbits Ztschr f d ges exper Med. 92 394-396 1933

29 Greene C H Bercovitz Zacharias and Hanssen E C Liver and Biliary Tract A Review Arch Int Med 53 681-706 (April) 1935

30 Ucko H Zum Mechanismus der Reaktion nach Takata Ara Klin Wchnschr 13 468-469 (March 30) 1935

31 Zirm Konrad Ueber die Beeinflussung der Takata Ara Reaktion durch Heparin Klin Wchnschr 12 1692-1696 (Oct. 28) 1933

32 Ragins Medvet C V and Paschke K E Die Beeinflussung der Takata Ara Reaktion und des Agglutinationsbandes durch Heparin Klin Wchnschr 12 1910 (Dec. 9) 1933

33 Skouge Magath Ragins

34 Snell A M Charges in the Proteins of Blood in Heart Disease Proc Staff Meet Mayo Clin 31 489-492 (July 31) 1935

35 Peters J P and Eisenman A The Serum Proteins in Disease Not Primarily Affecting the Cardiovascular System or Kidneys M Sc 180:808-833 (Dec.) 1933

36 Bruckman F S D Exopol M and Leter J I The Pathology of Proteins in Relation to Blood Hydration J Clin Investigation 6 42 (June) 1930

37 Wu Hsien A New Colorimetric Method for the Determination of Plasma Proteins J Biol Chem 51 3139 (March) 1922

38 Howe P E The Use of Sodium Sulfate in the Determination of Proteins in the Blood J Biol Chem 40 93 (Nov.) 1921

Serums with reversed albumin-globulin ratios were investigated. There were eighteen such cases, thirteen of which gave a positive Takata-Ara reaction, a correlation closer than Schindel and Barth¹¹ obtained (eight positives out of twenty-one serums with reversed albumin-globulin ratio), but not very definite. Mere reversal did not seem to be the important factor and absolute increases in globulin with 3 per cent as the upper limit of normal were tabulated. There were twenty-one such cases, of which nineteen gave positive Takata-Ara reactions (table 2). There were three cases of positive Takata-Ara reactions with globulin below 3 per cent for which no explanation can be offered. The total serum globulin was then calculated from the percentage figures given by Schindel and it was found that seventeen of his twenty-one positive Takata-Ara reactions were associated with globulins higher than 3 per cent.

Rowe³⁸ has found reports of globulin averages from 3 to 3.5 per cent in nephritis, pneumonia, angina pectoris, tetanus and diabetes. Bruckman, D'Esopo and Peters³⁹ report a case of gumma presenting a globulin of 6.13 per cent. Wu⁴⁰ finds globulins ranging from 3.35 to 7.06 per cent in kala-azar, and Hugonot obtains positive Takata-Ara reactions in his own cases of kala-azar. Meleney⁴⁰ reports globulin averages of 5.34 per cent in fourteen cases of *Schistosomiasis japonica*. In our sixteen cases of cirrhosis of the liver the average globulin was 3.4 per cent, while the average albumin was 3.17 per cent. In the thirty-three negative cases these figures were 2.18 per cent for globulin and 3.91 per cent for albumin (table 2).

It seems reasonable to suppose that increased globulin will give a positive Takata-Ara reaction in most instances, which, as has been shown, may occur in a variety of clinical syndromes.

SUMMARY

Reports of Takata-Ara reactions in 3,583 patients have been collected from the literature. The test was positive in 315 out of 375 cases of cirrhosis of the liver. It was negative in 2,254 out of 2,316 cases presenting no known liver involvement. Serum protein determinations and the Takata-Ara reactions were carried out simultaneously on fifty-six patients in our own series. Nineteen of our twenty patients with serum globulin of over 3 per cent gave positive Takata-Ara reactions. Only three of our thirty-six patients with globulins of less than 3 per cent gave positive Takata-Ara reactions.

The average figures for albumin of 3.91 per cent and for globulin of 2.18 per cent found in our thirty-three negative patients compares favorably with the normal figures reported in the literature. The sixteen patients with cirrhosis of the liver had an average albumin figure of 3.17 per cent and an average globulin of 3.4 per cent.

CONCLUSIONS

The Takata-Ara reaction is not diagnostic of cirrhosis of the liver.

The Takata-Ara reaction is likely to be positive in any disease within which the globulin level is elevated.

525 East Sixty-Eighth Street

³⁸ Rowe A. H. The Albumin and Globulin Content of Human Blood. *Serum Arch. Int. Med.* 18: 455-473 (Oct.) 1916.

³⁹ Bruckman F. S., D'Esopo L. M. and Peters J. P. The Plasma Proteins in Relation to Blood Hydration. *J. Clin. Investigation* 8: 577-590 (June) 1930.

⁴⁰ Meleney J. and Wu Hsien. Serum Proteins in *Schistosomiasis japonica*. *China M. J.* 38: 357-361 (May) 1924.

THE CLINICAL DIAGNOSIS OF AMEBIC DYSENTERY

GEORGE W. McCOY, M.D.

AND

ALBERT V. HARDY, M.D.

Medical Director and Consultant, Respectively, U. S. Public Health Service

WASHINGTON, D. C.

In few diseases is the importance of specific diagnosis better illustrated than in amebic dysentery. If treated symptomatically, the illness tends to be protracted and to become progressively more distressing, if inaccurately diagnosed, therapeutic procedures hazardous to life are likely to be instituted. On the other hand, if accurately diagnosed, specific medication brings rapid relief and prompt recovery. The central problem of the effective handling of this disease is its recognition.

In the study of the Chicago outbreak the difficulties in the diagnosis of amebic dysentery frequently have been brought to our attention, commonly by impressive case records. We have ascertained that but one fifth of the active cases later reported had been identified accurately prior to the general knowledge of the occurrence of the epidemic. Concurrent and subsequent observations of endemically occurring infections also have revealed a substantial proportion of cases with long delayed diagnosis. We wish, therefore, to bring to the attention of practitioners that information which, in our opinion, serves best to facilitate the diagnosis of this condition.

As a basis for this report, we have clinical data on 1,215 cases. Our records, which vary in completeness, include reports submitted by attending physicians, questionnaires completed by patients or their representatives, and supplementary information elicited by correspondence and personal interviews. The complete analysis of these data has been presented elsewhere.¹

THE OCCURRENCE OF AMEBIC DYSENTERY

Of considerable importance in the diagnosis of any disease is a knowledge of its distribution, geographic, seasonal and in varying population groups. For the United States, evidence relative to these distributions of amebic dysentery is incomplete, but the information is adequate for clinical purposes.

During the one major epidemic outbreak (Chicago, 1933), cases were recognized in all parts of the United States, but particularly among the well-to-do of the larger urban centers of the North where the infection would be least expected. As a result of the wide interest thus engendered, endemic infections also have been widely recognized. Contrary to recent beliefs and teachings, it is now known that amebic dysentery is not limited in distribution by latitude, season or social standing.

It appears reasonable and safe to assume that variations in prevalence in different areas do occur. From a knowledge of source and modes of dissemination of amebic dysentery as compared with typhoid fever and bacillary dysentery, it is to be expected that the relative prevalence of the endemic *Endamoeba histolytica* infections will, in general, correspond. Where pollution with human excrement is known to occur, amebic

¹ A full discussion of the clinical aspects of epidemic amebic dysentery as observed in the Chicago outbreak of 1933 is to be found in National Institute of Health Bulletin 166. This bulletin entitled, *Epidemic Amebic Dysentery: the Chicago Outbreak of 1933* can be obtained from the Superintendent of Documents, Washington, D. C. by forwarding 20 cents to that official.

dysentery as well as the other enteric infections is to be expected. Recently in the study of water-borne epidemics of typhoid fever and acute enteritis, careful observation brought to light a few cases of amebic dysentery which probably otherwise would have gone undetected. Further observations in this line are to be desired. In such situations, judging by the Chicago outbreak, the symptoms of amebic dysentery usually will appear (in about two thirds of the cases) between the end of the first week and the end of the first month after exposure, but the incubation period may be even less than one week or, occasionally, as long as three months.

Amebic dysentery therefore must be considered in differential diagnosis at all times and in all places, but especially where the incidence of other enteric infections is high. Groups known to have been exposed to human fecal pollution should be followed with particular care for evidence of the occurrence of *Endamoeba histolytica* infection.

CLINICAL MANIFESTATION

Amebic dysentery is one of the large group of diarrheal diseases the various members of which are strikingly lacking in prominent differential characteristics. The response to *Endamoeba histolytica* invasion may be so mild that notable symptoms are lacking or there may be a minor gastro-intestinal disorder with or without diarrhea. The graver manifestations include evidences of an acute or chronic ulcerative process in the large bowel varying both in extent and in the area chiefly involved. Occasionally this may be associated

Early Inadequate or Erroneous Diagnoses in *Endamoeba histolytica* Infection

Erroneous Diagnosis	In Fatal Cases	In Nonfatal Cases
Colitis ulcerative (mucous and other nonspecific)	11	73
Dysentery bacillary or type undetermined	5	16
Intestinal flu	4	10
Tuberculous enteritis	3	2
Diverticulitis	2	0
Stomach poisoning and food poisoning	1	2
Appendicitis or abscess right lower quadrant	14	27
Cholecystitis or abscess right upper quadrant	5	8
Intrapertitoneal abscess	1	1
Cancer (rectum intestine stomach and liver)	17	1
Hemorrhoids anal fissure and rectal polyps	1	18
Pleurisy and empyema	1	2
Typhoid fever and malaria	2	4
Total erroneous diagnoses reported	67	164
Total reported cases erroneously diagnosed	50	164

with extensive tissue destruction. There are also the various complications, which usually, but not always, are preceded by intestinal symptoms. It is this variability in characteristics which makes difficult the accurate diagnosis of this infection.

To American physicians generally, amebic dysentery has been presented as a grave chronic disease with gradual onset and an afebrile course marked by intermittent abdominal pain and the frequent passage of stools containing much bloody mucus. As an aid in accurate diagnosis the common variations from this must be emphasized.

In 18 per cent of our cases the onset was abrupt, and in one third of all cases it was with symptoms other than diarrhea or abdominal pain. Fever and vomiting, with abdominal pain localized in the right lower quadrant and accompanied by tenderness and rigidity, often served to limit attention to the appendix. It has been demonstrated that the amebic infection frequently first establishes itself in the cecum and may involve the appendix. Thus differential diagnosis is particularly

difficult but exceptionally important. Appendectomy in this disease proved a treacherous and hazardous procedure, death resulting in thirteen (41 per cent) of the thirty-two cases in which this treatment was reported. Rectal distress with blood in the stools has provided a clinical picture interpreted as hemorrhoids. Six of these cases were treated surgically, one with a fatal outcome. In the foregoing cases it was the nature of the onset, which lacked the characteristic diarrhea, that limited attention to other than the diarrheal disorders.

Likewise, certain features of the course of the disease have proved misleading. There were the illnesses which began insidiously and were characterized by weakness, persistent abdominal distress and mild diarrhea with bloody mucus in the stools. On examination a mass was detected in the cecum or the course of the colon, or found on rectal examination. (In amebic infection this appears to be due to edema.) For obvious reasons, such cases have been regarded as due to a malignant condition. In others, the elevation of temperature was confusing. Fever in some degree was found to be present in 70 per cent of the severer infections involving Chicago residents, and this condition was reported spontaneously in almost one third of all out-of-town cases. An elevated temperature therefore does not speak against the existence of amebic dysentery.

DIAGNOSTIC ERRORS

Early diagnoses which proved inadequate or erroneous have been reported in 214 cases, as shown in the table. These are the more significant since the patients concerned were ordinarily in comfortable economic circumstances and sought relief from physicians of recognized ability.

It is noted that the most common mistake was the acceptance of nonetiologic diagnoses such as colitis or "dysentery." In fatal cases, however, the condition was more commonly designated as one of a surgical nature. In order of frequency, these erroneous diagnoses were malignancy, appendicitis or appendiceal abscess, sepsis in or near the gallbladder, and in one case hemorrhoids. In one half of the fatal cases mistaken diagnoses were reported, and in more than two thirds of these the illness had been handled as a surgical disease. As previously indicated, lack of specific diagnosis deprived the patients of effective therapy, but certain of the erroneous diagnoses subjected them to therapeutic procedures hazardous to life.

The influence of diagnosis on the prognosis has in other ways been apparent. In the total series of 1409 cases observed in the study of the Chicago outbreak there were ninety-eight (7 per cent) deaths. The highest fatality rate was in the nonhotel cases which had originated prior to the epidemic period and had progressed for months or years unrecognized. Likewise in the epidemic cases the severity of the course and the proportion of fatalities varied directly with the duration of illness prior to diagnosis. According to our report in no instance did a fatality follow early consultation, prompt diagnosis and adequate specific therapy. Thus the prognosis was directly dependent on the promptness of diagnosis and the institution of specific therapy.

MAJOR DIAGNOSTIC CONSIDERATIONS

In arriving at a correct diagnosis of this disease the following considerations appear to us of chief importance.

1. There should be a more consistent endeavor to arrive at an etiologic diagnosis of the diarrheal disease.

This is of importance not only in the identification of amebic dysentery but also for *Bacillus dysenteriae* infections

2 As an intestinal parasite, *Endamoeba histolytica* is widely disseminated in all parts of the United States. Though unknown as to prevalence still clinical disease from this cause is now known to occur sporadically in all regions of this country. Amebic infection therefore must be more commonly considered in differential diagnosis.

3 Disease caused by this parasite varies widely in clinical manifestations simulating among others "simple diarrhea," minor gastro-intestinal disorders and major surgical conditions. Hence the possibility of amebic infection must be weighed in the diagnosis of a wide variety of clinical disorders.

4 Confirmation of clinical diagnosis may rest on either the identification of the etiologic agent or the prompt response to specific therapy. Concerning the former it is to be emphasized that undue weight must not be given to negative laboratory examinations. Even by experienced workers the organism cannot always be found in the discharges, and by the less experienced they may not be recognized. The more frequent use of a therapeutic test with one of the newer amebicides would we believe, be of material aid in the more prompt and accurate identification of this disease.

National Institute of Health Twenty-Fifth and E streets NW

THE USE OF STANDARDIZED MOUSE BRAIN ANTIGEN

FOR THE PERFORMANCE OF THE FREI TEST
FOR LYMPHOGRANULOMA INGUINALE

ARTHUR W. GRACE, M.D.
AND
FLORENCE H. SUSKIND, M.S.
NEW YORK

The recent appearance of an article by Strauss and Howard¹ condemning the use of lymphogranulomatous mouse brain antigen for the routine performance of the Frei test has necessitated the publication of our results with the use of this material for a period of two years at the New York Hospital. Since May 1934, 595 tests have been made with mouse brain materials in an attempt to establish the efficacy of lymphogranulomatous mouse brain antigen for Frei testing. The tests included those performed with lymphogranulomatous mouse brain antigen, both our own (New York Hospital) and commercial in patients infected with lymphogranuloma inguinale and control tests which were carried out with normal mouse brain antigen in the same subjects and with normal mouse brain and lymphogranulomatous mouse brain antigens in individuals who have never had the disease. In Strauss and Howard's paper the only results that are strictly comparable with ours are those which they obtained after observing three positive and eleven control tests with commercial antigen. Commercial and New York Hospital antigens are prepared and standardized by the same method, from the same strain of virus and with the same strain of mice. The remainder of

their paper deals with results obtained by the use of totally different mouse brain emulsions. Their conclusions as to the value of mouse brain Frei antigen of the type that is distributed commercially—an entirely new product—are therefore based on too slender experience to be of any significance.

Prior to the introduction of lymphogranulomatous mouse brain antigen the only material available for the performance of the Frei test was antigen made from human pus as first described by Frei.² Human pus antigen, however, is limited in supply and is an unsatisfactory material for several reasons, viz:

1 Cases of suppurating buboes due to lymphogranuloma inguinale from which pus may be obtained are encountered relatively infrequently.

2 Only that pus can be used which is uncontaminated with other organisms. Secondary infection following sinus formation and the coexistence of other venereal diseases occur often enough to make suitable pus scarce.

3 When a suitable case presents itself, the pus is usually available only in small quantities.

4 Specimens of pus taken from different cases vary in antigen content.

Previously we³ have shown that lymphogranulomatous mouse brain antigen has none of these disadvantages. Thus:

1 With a sufficiently virulent strain of the virus which is susceptible of being transmitted indefinitely through mice, the supply of antigen is unlimited and readily available.

2 By use of mice known to be free from spontaneous diseases and by careful laboratory technique, contamination with other organisms is unlikely.

3 By proper dilution and dosage, the exact details of which depend in the first place on the virulence of the virus and finally on the degree of reaction in known lymphogranuloma inguinale cases, a standardized product may be obtained the sensitivity and specificity of which are equal to that of human pus antigen.

It is our purpose in this paper to present evidence that standardized lymphogranulomatous mouse brain antigen is an excellent material for the routine performance of the Frei test.

METHODS AND MATERIALS

Antigens—1 The Source of Lymphogranulomatous Mouse Brain Antigen. All the specimens of lymphogranulomatous mouse brain antigen employed in this work have been prepared from a single strain of virus which was isolated in April 1934 from the pus and glandular tissue of a Negro who had the inguinal type of the disease.⁴ Each of the ninety-five of our antigens and the forty-one commercial antigens represented a single passage of the virus except in six instances in which brains from several passages were pooled to make a single antigen. There have been 111 passages to date.

2 Preparation and Standardization. It was seen that with successive transmission through the brains of mice the virus increased in virulence. It was also noted that with the same volume and concentration of inoculum the greater the virulence of the virus the greater the antigen content of the infected brains. In order to obtain standardized lymphogranulomatous mouse brain antigen it first became necessary to obtain

2 Frei W. Eine neue Hautreaktion bei Lymphogranuloma inguinale. Klin. Wchnschr. 4: 2148 (Nov 5) 1925.

3 Grace A. W. and Suskind Florence H. Lymphogranuloma Inguinale. III. The Use of Lymphogranulomatous Mouse Brains for Diagnosis. Arch. Dermat. & Syph. 34: 65 (July) 1936.

4 Grace A. W. and Suskind F. H. Successive Transmission of the Virus of Lymphogranuloma Inguinale Through White Mice. Proc. Soc. Exper. Biol. & Med. 32: 71 (Oct.) 1934. Lymphogranuloma Inguinale. II. The Cultivation of the Virus in Mice and Its Use in the Preparation of Frei Antigen. Arch. Dermat. & Syph. 33: 853 (May) 1936.

From the New York Hospital and Department of Medicine, Cornell University Medical College.

1 Strauss M. J. and Howard M. E. The Frei Test for Lymphogranuloma Inguinale. Experiences with Antigen Made from Mouse Brains. J. A. M. A. 106: 517 (Feb 15) 1936.

brains of approximately the same antigen content. This was accomplished by adjusting the volume and concentration of inoculum to the virulence of the virus. The details of preparation and standardization of our lymphogranulomatous mouse brain antigen follow. The Frei antigens which are distributed commercially and which were used in this paper were made in approximately the same way.

Healthy mice weighing 20 Gm were inoculated with a suspension of virus of such concentration that 0.03 cc of the inoculum caused the death of from 85 to 100 per cent of the animals in five to seven days. On the seventh day a dying mouse was killed and its brain removed aseptically and emulsified in a sterile mortar with sterile physiologic solution of sodium chloride. Sufficient diluent was used so that 0.05 or 0.1 cc of the heated resultant product produced in individuals with lymphogranuloma inguinale a papule not less than 7 mm in diameter, usually from 7 to 10 mm. This figure was chosen in accordance with Frei's original work, in which it was stated that a good positive test manifested itself as a papule from 0.75 to 1 cm in diameter. It was found that 0.05 cc of a 1 in 10 dilu-

TABLE 1—Summary of Frei Tests Performed with Mouse Brain Antigens at the New York Hospital from May 1934 to April 1936

Antigens Used		Individuals Tested				Average Diameter of Papule
L I M B or N M B	Where Prepared	No of Differ- ent Antl gens	L I or Non L I	No of Differ- ent Indi- viduals	No of Tests	
		Positive Tests				
L I M B	N Y H	95	L I	42	118	10.0 mm
L I M B	Commercial	41	L I	20	53	9.3 mm
Control Tests						
L I M B	N Y H	83	Non L I	128	217	3.0 mm
L I M B	Commercial	18	Non L I	20	24	3.7 mm
N M B	N Y H	10	Non L I	107	118	2.2 mm
N M B	N Y H	10	L I	39	57	2.9 mm
N M B	Commercial	3	L I	7	8	3.5 mm

Meaning of symbols: L I lymphogranuloma inguinale non L I not infected with lymphogranuloma inguinale; L I M B lymphogranulomatous mouse brain antigen prepared and standardized according to the authors' method; N M B normal mouse brain antigen prepared in the same manner as L I M B; N Y H New York Hospital.

tion or 0.1 cc of a 1 in 13 dilution produced such a reaction. It has been our practice since the eighty-eighth passage of the virus to perform the Frei test with 0.1 cc of a 1 in 13 dilution.

Heating of the emulsion was carried out in ampules in a water bath at 60 C for two hours on one day and for one hour on the next. Sterility tests were performed before and after heating and any material that showed aerobic or anaerobic growth within seven days was discarded. The finished product was placed in sterile rubber-stoppered vials and stored in the refrigerator. Sterility tests were repeated at intervals when the material was kept over a long period.

3 Control Antigens. These were prepared from normal mouse brains in the same dilution as the test antigens.

Subjects Tested.—1. Individuals with Lymphogranuloma Inguinale. Fifty different individuals known to have or have had lymphogranuloma inguinale were used. The group was composed of thirty-four white and sixteen colored persons, of whom thirty-seven were males and thirteen females. Twenty-three individuals

presented the inguinal type and twenty-seven the anorectal type of the disease; fourteen patients of the latter type were white males.

Forty-two individuals received 118 tests with ninety-five different specimens of our own lymphogranulomatous mouse brain antigen and thirty-nine received fifty-seven tests with our own normal mouse brain antigen. The forty-one commercial antigens were employed for a total of fifty-three tests in twenty individuals, while commercial normal mouse brain antigen was used for eight tests in seven persons.

2 Individuals Not Infected with Lymphogranuloma Inguinale. One hundred and twenty-eight persons made up the group of control individuals, all of whom were obtained from the general medical and surgical services. There was no history or clinical suggestive of lymphogranuloma inguinale among the group. Two asthmatic individuals were included and neither showed untoward local or general reaction to inoculations with normal mouse brain antigen or lymphogranulomatous mouse brain antigen. The entire group was tested with our lymphogranulomatous mouse brain antigen for a total of 217 tests, while 107 of them received 118 tests with our normal mouse brain antigen. Commercial lymphogranulomatous mouse brain antigen was used in twenty of these individuals for a series of twenty-four tests.

Performance of the Frei Test.—The tests were made by intradermal inoculation in the usual manner and the results read at the end of forty-eight and seventy-two hours.

SIZE OF POSITIVE AND CONTROL REACTIONS

An analysis of the size of the reactions which appeared from forty-eight to seventy-two hours after intradermal inoculation with lymphogranulomatous mouse brain antigen and normal mouse brain antigen in subjects with and without lymphogranuloma inguinale follows.

Measurements of the papules only were used in the analysis, since the size of the surrounding zone of erythema which usually was present in positive test varied within wide limits and was therefore regarded as a less reliable indicator of the degree of reaction. Accurate measurements were easily made with a thin flexible scale and were facilitated by indenting the periphery of the papule at 90 degree intervals with the nail of the palpating finger. Measurements were recorded in millimeters, and it was our custom to take two diameters of the papule, each at right angle to the other.

Reactions to Lymphogranulomatous Mouse Brain Antigen in Subjects with Lymphogranuloma Inguinale.—The size and appearance of reactions produced by use of our own and of commercial antigens in subjects with lymphogranuloma inguinale agreed very closely. The true average diameter of the papules given by our antigens in the series of 118 tests was 10 mm and that given by commercial antigens in the series of fifty-three tests was 9.3 mm. The distribution of papule size obtained in both groups of tests was practically the same. Of the total 171 tests performed with both New York Hospital and commercial antigens, 129 or 75 per cent, showed papules from 7 to 10 mm in diameter; thirty-two or 19 per cent showed papules from 10 to 15 mm in diameter; and the remaining ten or 6 per cent were larger. Eight of the ten large reactions were from 16 to 20 mm papules and one

measured 30 by 22 mm. The largest reaction observed resulted from the use of one of our antigens in a white woman who had anorectal lymphogranuloma of twenty years' duration following an inguinal infection nine years previously. The reaction consisted of an erythematous indurated area 37 mm in diameter, which contained a central black necrotic portion 25 mm in

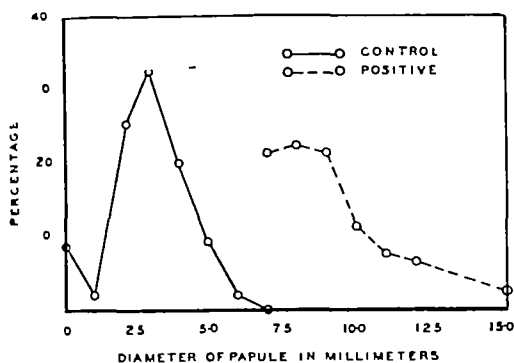


Fig. 1—The distribution of papule size in 424 control tests and 171 positive Frei tests following the use of thirteen normal and 136 standardized lymphogranulomatous mouse brain emulsions. The ten largest reactions are omitted because of difficulty in representing very small percentages. It must be remembered that just as occurs with human pus antigen the papular reaction to lymphogranulomatous mouse brain antigen in certain cases of lymphogranuloma inguinale may be smaller than that regarded as positive. Thus in the early stage of the disease before cutaneous allergy is well developed and in debilitated or cachectic individuals the Frei reaction may be weakened or entirely negative. Six individuals not included in the chart or paper fell into this group.

diameter covered with minute vesicles. The distribution of papule size in positive tests is shown in figure 1.

Forty of the fifty individuals with lymphogranuloma inguinale received two or more tests with different specimens of our and commercial lymphogranulomatous mouse brain antigen. The same person showed approximately the same size of reaction at each test. Thirty seven of the fifty subjects, or 74 per cent, produced papules from 7 to 10 mm in diameter, nine or 18 per cent, gave papules from 10 to 15 mm in diameter, and the remaining 8 per cent showed larger responses. We feel, therefore, that the variation in papule size among the 171 tests occurred by virtue of differences of degree of individual hypersensitivity. There was no apparent relation between the degree of reaction produced with lymphogranulomatous mouse brain antigen and that produced with normal mouse brain antigen in the same individual with lymphogranuloma inguinale. The reactions to control tests with normal mouse brain antigen will be dealt with later.

Figure 2 shows the variation in size of papules produced in different individuals with lymphogranuloma inguinale by the use of lymphogranulomatous mouse brain antigen and normal mouse brain antigen.

It is common knowledge that the papule in a strongly positive Frei test is often surmounted by vesicles or pustules which may later break down to form an ulcerated area. Of the 171 reactions to lymphogranulomatous mouse brain antigen, seventy were of this type.

We have also observed unusual reactions in twelve individuals in which an erythematous indurated area studded with pinhead-size papules replaced the usual single erythematous papule. These reactions which are not included in table 1 or figure 1, ranged from 7 by 7 mm to 35 by 33 mm. They were regarded as positive in all cases, as each of the twelve subjects on other occasions showed the usual type of positive response. Similar diffuse reactions were sometimes observed when human pus antigen was used.

Control Tests Reactions to Normal Mouse Brain Antigen in Subjects With Lymphogranuloma Inguinale and to Lymphogranulomatous Mouse Brain Antigen and Normal Mouse Brain Antigen in Subjects Without Lymphogranuloma Inguinale—In order to prove that the reactions dealt with in the previous section were susceptible of being produced only with lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale and that they could not be evoked by the use of normal mouse brain antigen or lymphogranulomatous mouse brain antigen in subjects not infected with lymphogranuloma inguinale the following tests were done.

A total of 424 control tests were performed in 128 individuals not infected with lymphogranuloma inguinale and forty-six individuals with lymphogranuloma inguinale with our and commercial antigens. The reactions obtained in the sixty-five tests with normal mouse brain antigen in individuals with lymphogranuloma inguinale the 241 tests with lymphogranulomatous mouse brain antigen and the 118 tests with normal mouse brain antigen in persons not infected with lymphogranuloma inguinale resembled each other closely. They all, with a few exceptions, produced small papules, which occasionally were surrounded by a small area of erythema. Some papule formation was to be expected since the material injected contained a considerable proportion of foreign substance (10 per cent mouse brain). The true average size of reactions for each group of tests is given in table 1. It will be noted that the average papule size in these tests was well below that of the positive tests. We have observed, however, that the responses to normal mouse brain antigen in subjects not infected with lymphogranuloma inguinale tended to be slightly

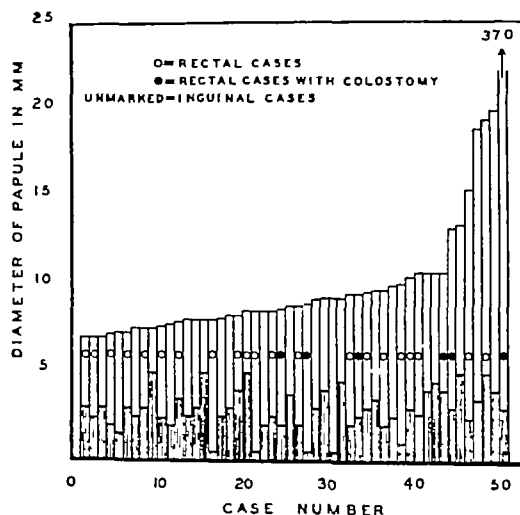


Fig. 2—Reactions to lymphogranulomatous mouse brain antigen and normal mouse brain antigen in individual subjects with lymphogranuloma inguinale. Ordinate. Shaded section of each bar represents reaction to normal mouse brain antigen; whole bar represents reaction to lymphogranulomatous mouse brain antigen. Abscissa. Individuals are arranged according to degree of reactivity to lymphogranulomatous mouse brain antigen.

smaller than the reactions to lymphogranulomatous mouse brain antigen in the same subjects or to normal mouse brain antigen in patients with lymphogranuloma inguinale.

An analysis of individual reactions showed that in 374, or 88.6 per cent, of the control tests there was either no reaction or the formation of papules rang-

ing from 1 to 4 mm in diameter. In forty-two, or 99 per cent, the papules were 5 mm in diameter, and in eight, or 15 per cent, the papules attained a 6 mm size (fig 1). We feel, however, that although the 6 mm papule approached a diameter that might be confused with a positive test, the confusion was more apparent than real. It was our impression that the 6 mm papule of a negative test did not extend above the surface of the skin as markedly as did the 7 mm papule of a positive test, nor was it as erythematous.

Two individuals showed reactions to normal mouse brain antigen and lymphogranulomatous mouse brain antigen that were suggestive of the presence of hypersensitivity to mouse brain protein. While the papules produced with either normal mouse brain antigen or lymphogranulomatous mouse brain antigen were no larger than those seen in the usual negative tests, there was a considerable surrounding erythematous zone, which was studded with pinhead size vesicles and was extremely pruritic. No history of sensitivity to other substances could be obtained in either of these persons.

1 *Reactions to Lymphogranulomatous Mouse Brain Antigen of Various Ages in Subjects with Lymphogranuloma Inguinale*—The tests with our lymphogranulomatous mouse brain antigen in individuals with lymphogranuloma inguinale were made over a period of one through 251 days after preparation of the antigens. Twenty-eight of the tests were performed within the first month after preparation or before the time when, according to Strauss and Howard, changes in the properties of mouse brain antigen take place. Of the tests carried out with older antigens thirty-one were made with materials that were from 29 to 60 days old, and fifty-nine with antigens that were from 61 to 251 days of age.

There was practically no difference in the reaction produced with antigens that were used within one month after preparation from those produced with antigens that were used as long as eight months after preparation. The distribution of papule size and true average size of papule were about the same for each time interval considered.

TABLE 2—Reactions Produced in Positive and Control Free Tests by the Use of Lymphogranulomatous Mouse Brain Antigens and Normal Mouse Brain Antigens of Various Ages

Type of Test		Ages of Antigen Used in Days									
		1-14	1-28	15-28	29-60	61-120	61-251	63	121-382	360-422	61-67
L.I.M.B. (N.Y.H.) in L.I. subjects	Number of antigens		25		27		51				
	Number of subjects		18		27		28				
	Number of tests		28		31		50				
	Average papule diameter mm.		10.0		10.4		9.6				
L.I.M.B. (commercial) in L.I. subjects	Number of antigens		11		11	13			12		
	Number of subjects		5		7	7			7		
	Number of tests		13		13	13			14		
	Average papule diameter mm.		9.5		8.9	8.5			10.2		
L.I.M.B. (N.Y.H.) in Non L.I. subjects	Number of antigens	0		12	37		43				4
	Number of subjects	37		30	41		37				4
	Number of tests	40		32	71		60				5
	Average papule diameter mm.	3.4		8.5	2.7		2.9				3.7
N.M.B. (N.Y.H.) in Non L.I. subjects	Number of antigens	2		2	2			2			
	Number of subjects	21		19	23			4			
	Number of tests	21		19	23			4			
	Average papule diameter mm.	2.2		8.1	2.8			3.7			
N.M.B. (commercial) in L.I. subjects	Number of antigens			3						3	
	Number of subjects			3						4	
	Number of tests			4						4	
	Average papule diameter mm.			8.0						3.7	

EFFECT OF AGE OF LYMPHOGRANULOMATOUS MOUSE BRAIN ANTIGEN AND NORMAL MOUSE BRAIN ANTIGEN ON SIZE OF REACTIONS PRODUCED

Strauss and Howard¹ object to the use of Frei antigens made from mouse brains on the basis of a few experiments which they feel demonstrated that "some change occurs in antigens made from mouse brains within a few weeks after preparation which, when injected intradermally, gives rise to a reaction almost indistinguishable from a true positive reaction." The nature of this change is unknown to them but they believe that it occurs in antigens made from normal as well as lymphogranulomatous mouse brains and that the reaction may be induced in subjects not infected with lymphogranuloma as well as in subjects with lymphogranuloma inguinale.

In order to discover whether such a change actually takes place with antigens prepared according to the method previously described, the results obtained with normal mouse brain antigen and lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale and subjects not infected with lymphogranuloma inguinale were divided into a number of groups, each group representing an interval of time which had elapsed between the date of preparation and the use of the antigen.

The results obtained with commercial antigens were analyzed from the same aspect. The shortest interval that elapsed between preparation and use of antigen was ten days, and the longest was 382 days. A separation of the tests into groups depending on the age of the antigen employed revealed results similar to those obtained by the use of our antigen. The true average size of reactions obtained with antigens used from 121 through 382 days after preparation was a little larger than those given by fresher antigens. The difference was due, however, to the presence of two large reactions in the former group that were given by unusually strong reactors. The same antigen that produced these large reactions gave papules from 2 to 4 mm in diameter in subjects not infected with lymphogranuloma inguinale when tested on the same date as in the subjects with lymphogranuloma inguinale.

2 *Reactions to Lymphogranulomatous Mouse Brain Antigen of Various Ages in Subjects Not Infected with Lymphogranuloma Inguinale*—Our lymphogranulomatous mouse brain antigens which were used in the tests in subjects not infected with lymphogranuloma inguinale ranged in age from 9 to 636 days. In twenty tests the antigens were employed within two weeks after preparation, and in thirty-two others from ten to twenty-eight days after preparation. The remainder

of the tests were made with antigens more than four weeks old of which seventy-one were carried out with antigens from 29 to 60 days old, sixty-six with material that was from 61 to 251 days old, and eight with antigens that were prepared almost two years previously. Antigens used within two weeks after preparation gave practically the same size of reaction as

To sum up the work dealt with in this part of the paper, it can definitely be said that no appreciable change demonstrable by the performance of an intradermal test in individuals with lymphogranuloma inguinale or not infected with lymphogranuloma occurred in normal mouse brain antigen or standardized lymphogranulomatous mouse brain antigen at any period up to two years after preparation of the antigens.

COMMENT

Any suspension of a foreign substance, particularly protein when injected intradermally into a human subject will produce an inflammatory response at the site of inoculation. The reaction will occur despite the fact that the material may be chemically inert and free from living or dead micro-organisms. The severity of the reaction will be influenced by the nature of the material and the presence or absence of hypersensitivity to the material in the individual inoculated. These facts must be considered in the interpretation of the cutaneous response in a Frei test regardless of whether the test is performed with mouse brain antigen or with human pus antigen.

The Frei reaction is an allergic phenomenon and occurs only when material containing the killed virus of lymphogranuloma inguinale is inoculated intradermally into individuals who have or have had the disease. Thus far it has not been found possible to separate the virus from the tissue in which it is found, therefore Frei antigen of necessity contains a large proportion of dead disintegrated tissue. This is true both for

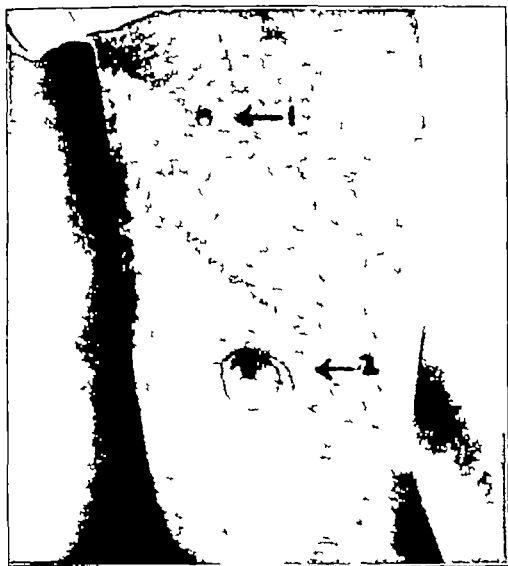


Fig 3—Seventy two hour reactions to normal mouse brain antigen and commercial lymphogranulomatous mouse brain antigen in a colored male who had suppurating inguinal adenitis of three and one-half years duration due to lymphogranuloma inguinale. The papules and area of erythema are ringed. One half natural size. 1 Control reaction to normal mouse brain antigen. 2 Positive reaction to lymphogranulomatous mouse brain antigen. Note the pustule surmounting the papule.

those which were almost two years old. No reactions that could be interpreted as positive were observed in these control tests.

Analysis of the effect of age on lymphogranulomatous mouse brain antigen revealed that there was neither an increase nor a diminution in the size of reactions produced by our antigens within 636 days and by commercial antigens within 382 days after preparation.

3 Reactions to Normal Mouse Brain Antigen of Various Ages in Subjects Not Infected with Lymphogranuloma Inguinale—In only sixty-seven of the 118 tests made in individuals not infected with lymphogranuloma inguinale with our normal mouse brain antigen were the dates of preparation of the antigen known. These sixty-seven tests were performed in as many different individuals with emulsions of normal mouse brain antigen which were prepared from five to ninety-three days previously. Although the smallest average size of reaction was obtained with antigens used less than ten days after preparation the increase in size over this given by the older antigens was negligible and could not be regarded as an indication of a change in the properties of the antigen sufficient to produce false positive results.

4 Reactions to Normal Mouse Brain Antigen of Various Ages in Subjects with Lymphogranuloma Inguinale—The results obtained by the use of our and commercial normal mouse brain antigen of varying ages in subjects with lymphogranuloma inguinale closely paralleled the results observed in subjects not infected with lymphogranuloma inguinale with the same material.

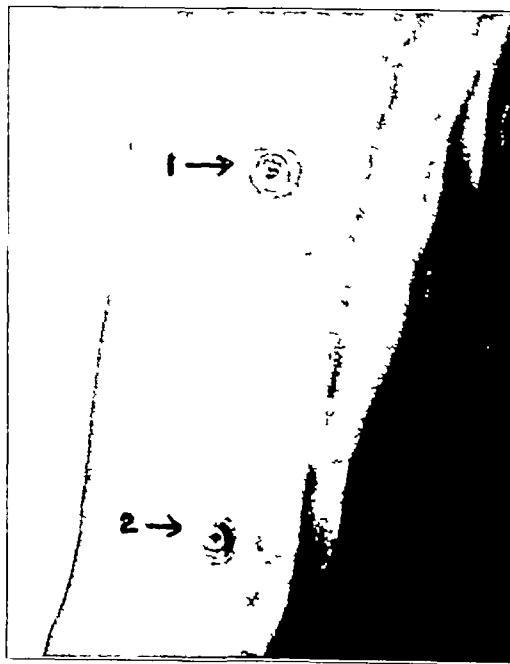


Fig 4—Seventy two hour positive reactions to two other commercial lymphogranulomatous mouse brain antigens in the same subject as figure 3. Sloughing of the central portion of the papules is present. The papules and areas of erythema are ringed. One half natural size.

mouse brain and human pus antigens. The products of tissue disintegration are capable of producing an inflammatory response on intradermal inoculation.

5. Except to a certain degree in the antigen prepared according to the method of Tamura J. T. Cultivation of Virus of Lymphogranuloma Inguinale and Its Use in Therapeutic Inoculation J. A. M. A. 103: 408 (Aug. 11) 1934.

6. Wells, H. G. Chemical Pathology Philadelphia W. B. Saunders Company 1925.

Unless one is familiar with the type and degree of such responses errors may be made in evaluating the reaction to a Frei test.

Lymphogranulomatous mouse brain emulsions prepared and standardized according to the methods described in this paper produced in 75 per cent of the tests in individuals with lymphogranuloma inguinale high well defined papules from 7 to 10 mm in diameter. The remaining 25 per cent of tests showed papules larger than 10 mm in diameter. In no instance was the diameter of the papule less than 7 mm. All the papules were erythematous and were usually surrounded by a zone of erythema as well. Frequently they were surmounted by pustules or vesicles which were sometimes followed by ulceration of the central portion of the papule.

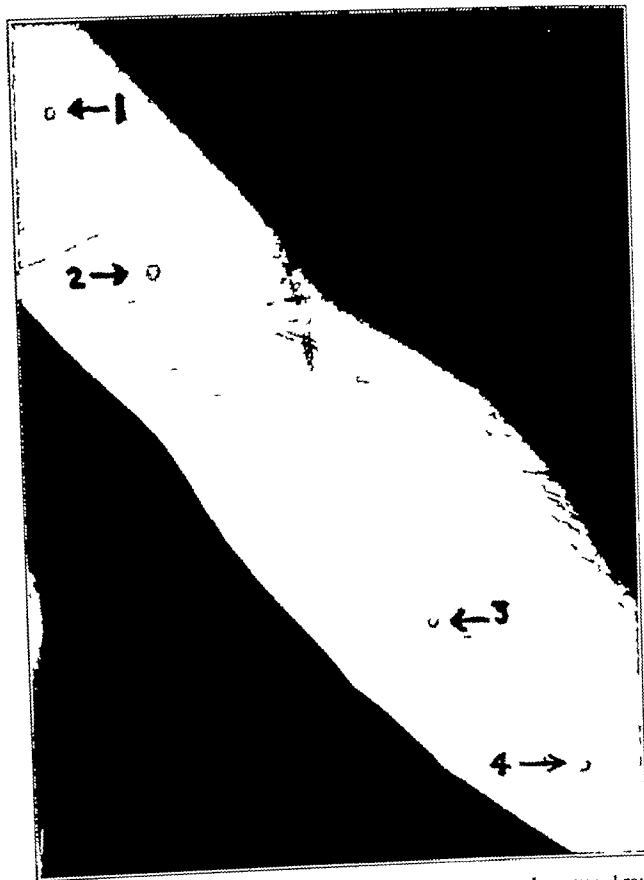


Fig 5—Seventy-two hour control reactions to normal mouse brain antigen and lymphogranulomatous mouse brain antigens of various ages in a subject not infected with lymphogranuloma inguinale. One half natural size. 1 Reaction to lymphogranulomatous mouse brain antigen used 636 days after preparation. 2 Reaction to lymphogranulomatous mouse brain antigen used 633 days after preparation. 3 Reaction to normal mouse brain antigen used ninety-three days after preparation. 4 Reaction to lymphogranulomatous mouse brain antigen used thirty-five days after preparation.

Determination of the degree of the nonspecific response caused by the presence of the broken-up brain tissue in mouse brain antigen was made in the series of control tests. In no instance was this response equivalent to a positive test. Usually a papule was produced which was from 1 to 4 mm in diameter and of varying degrees of erythema. In a small percentage of the reactions (15 per cent) 6 mm papules were obtained but these were less erythematous and lower than the smallest 7 mm papule produced in positive reactions. The formation of pustules and vesicles was never observed in control tests except in two cases in which there was vesiculation accompanied by marked pruritus.

It was felt that the latter reactions were possibly due to hypersensitivity to mouse brain protein. The reactions of subjects not infected with lymphogranuloma inguinale to inoculation of antigens prepared from mouse brains infected with lymphogranuloma inguinale were practically the same as the reactions to normal mouse brain material.

In a small series of unpublished tests we attempted to determine the quality and size of nonspecific reactions produced by the extraneous material present in human pus antigen. Fourteen subjects not infected with lymphogranuloma inguinale were inoculated intradermally with three different specimens of human pus antigen of various ages for a series of twenty-six tests. In twenty-one of these tests papules were obtained which ranged from 1 to 4 mm in diameter and the remaining five tests merely showed small areas of erythema. The papules differed from those obtained in control tests with mouse brain antigens chiefly in that they were somewhat less erythematous and were on the average slightly smaller. The difference however may be explained on the basis that human pus is a less foreign substance than mouse brain, and consequently a less severe inflammatory response would be expected to accompany its use.

It is the larger size and more erythematous nature of nonspecific reactions to lymphogranulomatous mouse brain antigen that may lead those familiar only with reactions produced by human pus antigen into erroneous conclusions as to the specificity of the former material. On this account we advocate the use of normal mouse brain antigen as a control concurrently with lymphogranulomatous mouse brain antigen in the performance of the Frei test.

Our experience has convinced us that there is a large enough difference between the specific and nonspecific reactions to standardized lymphogranulomatous mouse brain antigen to make this material with all its advantages over human pus antigen the most suitable for the performance of the Frei test. Furthermore we have shown that no changes occur in the antigen on standing for at least one year which alter the quality or size of the specific or nonspecific reactions produced by it.

SUMMARY

1 Lymphogranulomatous mouse brain antigen prepared and standardized according to the method described [L I M B] possesses none of the disadvantages of human pus antigen for the performance of the Frei test.

2 Ninety-five specimens of our lymphogranulomatous mouse brain antigen and forty-one specimens of commercial lymphogranulomatous mouse brain antigen were employed for a series of 171 tests in fifty individuals who were known to have had lymphogranuloma inguinale.

3 The same antigens were also used in 128 persons who never had lymphogranuloma inguinale for a group of 241 control tests. One hundred and eighty-three tests were carried out in subjects both with and without lymphogranuloma inguinale with antigens made from normal mouse brain [N M B].

4 A typical positive reaction resulted from every test with lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale in which the erythematous papule produced was never smaller than 7 mm in diameter and in 75 per cent of the tests was from 7 to 10 mm in diameter.

5 In none of the 424 control tests was a papule produced as large as 7 mm in diameter. The greater number of control reactions (88.6 per cent) showed papules from 1 to 4 mm in diameter.

6 The difference between positive and control tests was readily recognizable. The use of a control test with normal mouse brain antigen concurrently with lymphogranulomatous mouse brain antigen was advocated.

7 No change was observed to occur in either our or commercial lymphogranulomatous mouse brain antigen and normal mouse brain antigen on standing for any length of time up to two years after preparation which would make lymphogranulomatous mouse brain antigen unsatisfactory material for the performance of the Frei test.

8 Consequently, it is felt that standardized lymphogranulomatous mouse brain antigen is the most suitable material for the routine performance of the Frei test.

525 East Sixty-Eighth Street

TULAREMIA WITH PLEURAL EFFUSION

CASE IN WHICH BACTERIUM TULARENSE WAS
ISOLATED FROM PLEURAL FLUID
DURING LIFE

FREDERICK C WARRING JR. M.D.
AND
VICTOR F. CULLEN M.D.
STATE SANATORIUM, MD.

During the thirty years that tularemia has been recognized, interest has increased in the pleuropulmonary manifestations of the disease. Blackford¹ recently reported a series of thirty-five consecutive cases of tularemia, of which approximately half showed clinical evidence of involvement of the thoracic viscera and more than 90 per cent showed x-ray abnormalities that might be attributed to the disease; he concluded that intrathoracic infection was frequent in patients who recover. He classifies the clinical signs in the chest as (1) tularemic pneumonia, (2) tularemic bronchitis and (3) tularemic pleural effusion. Archer, Blackford and Wissler² describe the roentgenologic observations in the same series of cases. Tularemia with pleural effusion seems to be the least frequent of the three, appearing in Blackford's series in three cases, compared with seven each of tularemic pneumonia and bronchitis. Since tularemia with pleural effusion in the weeks following the acute onset, so closely resembles both clinically and roentgenologically the wet pleurisy of tuberculosis, diagnosis, especially in the typhoidal type, may be rather difficult. It would be of great assistance in establishing the final diagnosis in doubtful cases if the causative organism could be obtained by culture or inoculation, but strangely enough *Bacterium tularense*, like the tubercle bacillus, is not easily isolated from the pleural fluid. In only three cases of tularemic pleurisy has the isolation of *Bacterium tularense* from the pleural effusion during life been reported. Gudger³

describes a case in which the organism was found in the pleural fluid, evidently before death. This patient succumbed in thirty-one days and the report includes the necropsy. In two instances the organism was found by Francis: the first a case of Blumberg and Russell⁴ and the other a case of Schrieber and Cajigas.⁵ The case about to be described is the fourth.

REPORT OF CASE

R. A., a white man aged 55, a truck driver, had enjoyed excellent general health until the present illness. His family and past histories were negative for tuberculosis. Sometime between Nov. 1 and 15, 1935, he shot and skinned a wild rabbit. He recalls that the rabbit seemed lively before being hit (no abnormality of the meat was noted) and there were no cuts or abrasions on his hands or fingers at the time. Likewise November 15 he skinned two more wild rabbits that had been shot by some one else. His good health continued until November 26 when a rather severe headache developed which became so intense on the following day that he was forced to stop work. In addition he felt extremely weak, lost his appetite and had fever to 103.5 F. and chills. The patient was put to bed by his family physician but continued to have a fever and in one or two days pain developed on deep inspiration in the right side of the chest, relieved by strapping. There were also night sweats, some dyspnea and a slight cough but no expectoration or hemoptysis. No ulcerations could be found on the extremities, no adenopathy nor any eye signs, the liver and spleen were not palpable. The temperature returned to normal in two weeks, with evening elevations to 99.5, but the symptoms of pleurisy continued. On the twelfth day the right side of the chest was tapped and 700 cc. of clear, amber fluid was withdrawn, smears of which were negative for tubercle bacilli. The urine at that time showed slight albumin and numerous white blood cells. December 10 he was taken to the local hospital where a roentgenogram showed pleurisy at the right base. Examination of the blood revealed red blood cells 4,250,000, hemoglobin 90 per cent and white blood cells 7,800 with 62 per cent polymorphonuclears and 38 per cent lymphocytes. The headache, chills and anorexia had disappeared although he was still weak and because of the pleurisy with effusion he was admitted for observation to the Maryland Tuberculosis Sanatorium, December 20.

Physical examination revealed signs of pleurisy at the right base, i. e. impaired note anteriorly and posteriorly below the third rib and fourth vertebral spine with suppressed breathing. No rales were heard. The only other finding of interest was a moderate dental caries. Roentgenograms of the thorax showed clouding of the right apex with dense clouding from the fourth rib to the base (fig. 1). Although there was an old slight fibrosis above the first rib on the left, there was nothing in the visible parenchyma that could be interpreted as active tuberculosis. The urine contained white blood cells ++ and no albumin. After several weeks of bed rest it was noticed that the temperature, while remaining normal for periods of about six days, would rise on the evening of the sixth or seventh day to 100 or 101, returning to normal on the following day (fig. 2). The sputum was negative for tubercle bacilli on nine examinations, Kahn and Kolmer tests for syphilis were negative. Because of the persistently negative sputums and the peculiar temperature curve,



Fig. 1—Tularemic pleural effusion one month after onset. *Bacterium tularense* was recovered from the pleural fluid two and one-half months later.

From the Maryland Tuberculosis Sanatorium.

The authors are indebted to Drs. Edward Francis, A. T. Brice and Elizabeth R. Wilkens for their assistance in preparing this paper and to the Bureau of Bacteriology of the Maryland State Department of Health which isolated the organism.

¹ Blackford S. D. Pulmonary Manifestations in Human Tularemia. J. M. A. 104: 891 (March 16) 1935.

² Archer A. W., Blackford S. D. and Wissler J. E. Pulmonary Manifestations in Human Tularemia. J. A. M. A. 104: 895 (March 16) 1935.

³ Gudger J. R. Tularemic Pneumonia. Report of a Case. J. A. M. A. 101: 1148 (Oct. 7) 1933.

⁴ Blumberg A. and Russell R. L. Intrathoracic Changes in Tularemia. South M. J. 27: 578 (July) 1934.

⁵ Personal communication to the authors.

it was thought advisable to do agglutination tests on the blood, and Feb 25, 1936 (three months after onset), the serum showed positive agglutination for *Bacterium tularensis* in dilutions of 1:320 with no cross agglutination for *Brucella melitensis*. The history of handling a rabbit was first elicited at this time. Further blood studies showed hemoglobin 79 per cent (Sahli), red blood cells 4,000,000, white blood cells 8,200 with 47 per cent polymorphonuclears, 2 per cent eosinophils, 2 per cent basophils, 16 per cent monocytes, 32 per cent lymphocytes and 1 per cent unclassified. Platelets were normal with some macrocytosis and pallor of the red blood cells. There was an unusually rapid blood sedimentation rate 27 mm in one hour. Mantoux tests were performed with purified protein derivative. No reaction occurred with the first strength (0.00002 mg) but there was a strong reaction to the second strength (0.005 mg).

March 3 (three and one-half months after onset) a third roentgenogram having revealed the pleurisy slightly more dense the right side of the chest was tapped posteriorly and 300 cc of a slightly cloudy yellowish brown fluid was aspirated which formed a heavy coagulum inside of half an hour. The specific gravity of this fluid was 1.026. It contained 5,575 white blood cells and an equal number of red blood cells (probably from operative trauma). A differential count on the white blood cells gave 96 per cent lymphocytes, mostly large and 4 per cent polymorphonuclears. Gram and acid-fast stains on centrifuged specimens revealed no bacteria. The pleural fluid strongly agglutinated *Bacterium tularensis* in dilutions of 1:640 even higher than the blood serum. Some of the exudate was inoculated into guinea pigs from which *Bacterium tularensis* was isolated in twelve days. A subculture was sent to Dr. Francis in Washington, D. C. who confirmed the organism. No guinea-pigs were inoculated for tubercle bacilli.

Four days later another attempt was made to secure pleural fluid. This time, however, aspiration was difficult; the needle frequently clogged and only 50 cc could be secured for culture and, unfortunately, that tube was broken before reaching the laboratory. Aspiration was tried for the third time March 24 but no fluid was obtained.

The treatment up to the time of aspiration had been palliative with bed rest and washroom privileges. The only symptom, weakness, which the patient had had on admission to the sanatorium had gradually disappeared. After aspiration of the pleural fluid the temperature, which up to that time had continued to evidence rises at intervals of six or seven days, dropped to normal and showed no more of this peculiarity. There was a single rise to 100 F the afternoon of the last aspiration since then it has not gone above 99 F. He gained 23 pounds (10.4 Kg).

The pleurisy appeared slightly less dense in a roentgenogram taken March 21. Blood studies done a few days later were

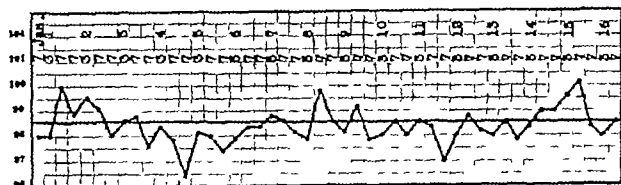


Fig 2—Tularemic pleural effusion. Periodic rises in temperature during the chronic stages of the illness.

comparable to those of the previous month. Red blood cells were 4,320,000, hemoglobin 83 per cent and white blood cells 6,800 with polymorphonuclears 54 per cent, eosinophils 4 per cent, basophils 1 per cent, monocytes 11 per cent and lymphocytes 28 per cent unclassified, 2 per cent. The blood sedimentation rate continued to be rapid at 24 mm in one hour.

Four and one-half months from onset the blood serum titer for *Bacterium tularensis* had risen to positive in 1:2,560, doubtful to 1:5,120. Never has it or the pleural fluid shown any cross agglutination for undulant fever. The urine returned to normal. In the final x-ray film (fig 3) there were still residual pleuritic shadows at the right base but these were less dense than previously. He was discharged April 12 as greatly improved to continue rest at home.

COMMENT

Clinical and roentgenologic evidence in this case resemble closely the appearance of the usual tuberculous pleurisy. Only after numerous negative sputum examinations was the blood serum examined and found to agglutinate *Bacterium tularensis*. Of course there was the typical history but without ulceroglandular or glandular lesions. Neither the patient nor the physicians thought of this until after the results of the agglutination tests were known.



Fig 3—Tularemic pleural effusion four and one-half months after onset. The pleural fluid has absorbed leaving residual clouding.

With the history, the positive agglutination of the blood and pleural fluid and the isolation of the organism from the pleural fluid it can be definitely said that the pleurisy was the result of infection by *Bacterium tularensis*. Unfortunately guinea-pigs were not inoculated with the pleural fluid for tuberculosis but the negative sputum

the inability to stain tubercle bacilli in the centrifuged pleural fluid and absence of any definite parenchymal lesion in the x-ray film support the belief that we are here dealing with a manifestation of tularemia alone.

When in cases of pleural effusion the organism, either the tubercle bacillus or *Bacterium tularensis*, can not be isolated by culture or inoculation although the blood and the pleural effusion agglutinate for tularemia, is it safe to make a diagnosis of the latter disease? In the ulceroglandular, glandular or oculoglandular case it probably is, but in the typhoidal type let it be remembered that agglutinins for tularemia have been shown to remain present in the blood serum for years and it is quite possible to have a tuberculous effusion develop in a patient who has a blood serum with positive agglutination to a tularemic infection incurred months or years before. Until we can discover better clinical or roentgenologic means of differentiating tuberculous pleurisy and tularemia with pleural effusion the isolation of the organism remains the deciding criterion for diagnosis during life in the typhoidal type of case.

The clinical, laboratory and x-ray examinations on this patient agree essentially with those reported in similar cases with some slight differences. For two and one-half months following the subsidence of the acute symptoms the case had a peculiar febrile course during which there would be normal temperature for a period of six or seven days followed by a sharp evening rise to 100 or 101 F, falling again the following day. Others have reported relatively low pulse rates in cases of tularemic pleural effusion. It is not known whether this was so in this patient during the first three weeks but the pulse was not relatively slow in the succeeding months at the sanatorium. Blackford reported normal leukocyte counts in his three cases. While this patient had total white blood cell counts within normal limits the differential counts showed a slightly increased percentage of lymphocytes and monocytes and a decrease of polymorphonuclears in the chronic stages. In cases of tuberculosis this blood picture, according to Medler

would indicate resistance with some hyperplasia. Of particular interest was the blood sedimentation rate which on three occasions during residence dropped 27, 27 and 24 mm in one hour. The tularemia pleural effusion on examination had the usual characteristics of a tuberculous effusion.

During the chronic stages of the disease improvement in the patient's condition seemed to take place immediately after aspiration of some of the pleural fluid and was manifested by disappearance of the peculiar temperature and of the remaining symptom weakness. Parallel with the improvement in the patient was a sharp rise in the agglutinating titer of the blood serum.

A RAPID CULTURAL METHOD FOR THE DIAGNOSIS OF TINEA INFECTIONS

FRANZ L. BLUMENTHAL, M.D.

AND

JAMES S. SNOW, M.D.

Research Professor of Dermatology and Syphilology and Instructor
in Dermatology and Syphilology, respectively, University
of Michigan Medical School

ANN ARBOR, MICH.

The dermatomycoses can usually be diagnosed by the clinical picture or the effect of therapy. It is desirable, however, to verify the clinical diagnosis by bacteriologic and specific biologic examinations. In this paper we shall deal only with the bacteriologic aids in diagnosis. There are two methods in general use, first the direct examination with the microscope after macerating the material with sodium or potassium hydroxide, and, second, the culture on Sabouraud's or other special agar mediums. The first is frequently inadequate and the second requires at least a week before a growth appears. For diagnostic work a more rapid cultural method would be very desirable.

For several years one of us (F. L. B.) had used a simple method employing a liquid medium of similar composition to Sabouraud's but without the agar. This consisted of placing the suspected material on an ordinary slide adding a few drops of the medium and covering this with a cover slip which was then surrounded by wax to prevent drying. The fact that this produced a relatively anaerobic condition was of no importance as it had been demonstrated¹ that the growth of mycelia was not hindered by anaerobic conditions. Grutz² found this method useful in studying sporotrichosis. Later we employed a hanging drop slide similar to that used recently by Hruszek³ for the microscopic study of mycelial colonies. Davidson and Gregory⁴ have also used a similar *in situ* preparation and emphasize the importance of microscopic study in classifying the dermatophytes.

METHODS

We have compared the results obtained with the hanging drop or *in situ* culture method in ninety cases with those obtained by the direct microscopic exami-

nation and culture on Sabouraud's original medium. These cases have all been followed for a sufficient period of time to establish the final diagnosis. The clinical material included forty-eight cases of tinea among which there were (1) seven cases of tinea of the scalp or beard, four of which were of kerion type; (2) ten cases of tinea of the glabrous skin; (3) four cases with involvement of the groin or axillae; (4) twelve cases of tinea of the hands which were eczematoid or pustular in character; (5) six cases of tinea of the feet, which were of an eczematoid or intertriginous nature; and (6) nine cases of onychomycosis.

Forty-two cases of conditions other than tinea were used as controls. These consisted of (1) six scalp cases such as alopecia areata, sycois vulgaris, seborrhea and pyoderma; (2) fourteen cases of generalized eruptions of the smooth skin including seborrheic dermatitis, contact dermatitis, atopic eczema, psoriasis and stasis dermatitis; (3) four cases of seborrheic dermatitis of the axillae or groin; (4) seven cases of contact dermatitis of the hands and nine scrapings from the palms of normal individuals; and (5) two cases with dystrophy of the nails secondary to contact dermatitis.

The lesions were first cleansed and scrapings were carefully taken with a sterile scalpel. These were usually selected from the periphery of flat lesions, from the under surface of pustules, or if hairs were being

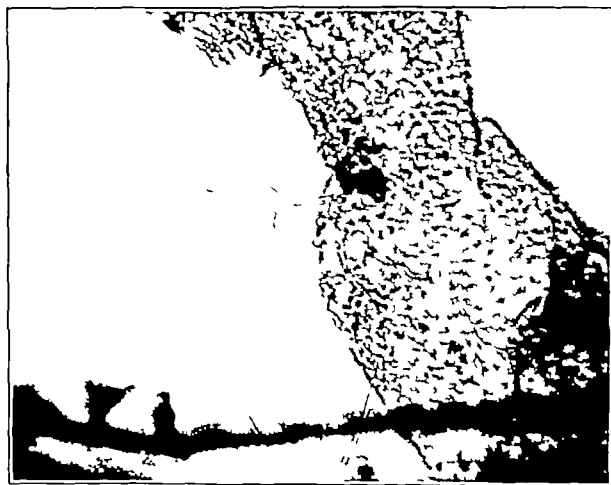


Fig. 1—Eighteen hour culture showing early growth from scale of patient with tinea corporis.

examined broken off ones were used. First a fresh preparation was made by placing a portion of the material in a drop of 20 per cent potassium hydroxide in the usual manner. This was warmed gently, allowed to stand for thirty minutes and then examined microscopically. Second Sabouraud's agar slant was inoculated kept at room temperature and observed daily for a month. Third a hanging drop preparation was made, using a liquid medium of the following formula: crude maltose of Chanut 4 Gm., peptone of Chassaign 1 Gm. and distilled water to make 100 cc.

A deep hanging drop slide was washed thoroughly, allowed to dry and flamed. Cover slips were kept in an alcohol-ether solution and were dried by being put in the flame. With a sterile loop a small drop of medium

Studies and Contributions from the Department of Dermatology and Syphilology, University of Michigan Medical School, Service of Dr. L. J. Wile.

1. Blumenthal, F. I. and Haupt, A. V. *Dermat. Ztschr.* 35: 293, 1921.

2. Crutz, O. *Handb. d. (eschelechtskr.) (Jada-sohns)* 9: 753, 1928.

3. Hruszek, H. *Dermat. Ztschr.* 71: 23 (March) 1935; *Arch. f. Dermat. u. Syph.* 1: 125 (Aug.) 1935.

4. Davidson, A. M. and Gregory, P. H. *Canad. J. Research* 10: 1 (April) 1934.

5. Crude maltose of Chanut 4 Gm., peptone of Chassaign 1 Gm., agar 1 Gm. and distilled water to make 100 cc.

was then carefully placed in the center of the upturned cover slip, scrapings or hairs were added and the cover slip was quickly turned over and put in place on the slide. If only a small amount of medium was used

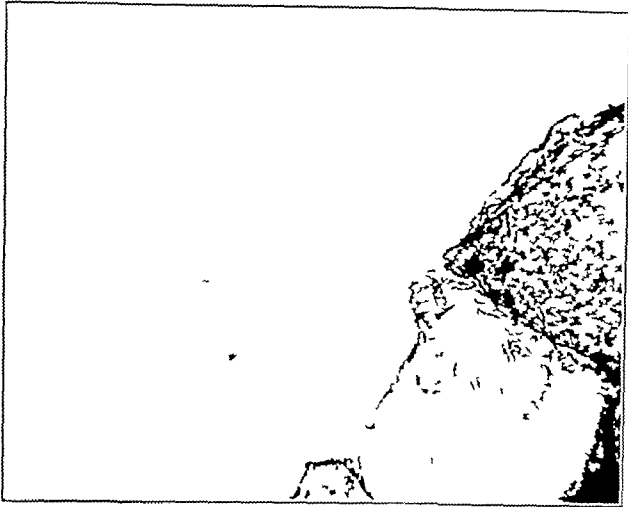


Fig. 2—Twenty four hour growth

it would remain suspended in the center of the ring and not run around the margin. The cover slip was then sealed in place with melted paraffin applied to the edges with a heated knife blade. The preparation was incubated at room temperature and examined twice a day with the microscope.

RESULTS

The accompanying table shows a summary of the comparative results obtained by the three methods of mycologic diagnosis for each of the lesions studied. In forty-eight cases of tinea infection mycelial filaments or spores were demonstrated in sixteen cases by the direct microscopic examination. On Sabouraud's agar medium a definite growth was obtained in thirty-one cases in an average time of 6.1 days. With the in situ

medium in an average time of 3.4 days and in five cases in the hanging drop in an average time of 1.5 days.

In the cases of tinea infection the two cultural methods agreed in all except four cases while in the other conditions positive growths occurred with only one method in each individual case and most of these could be readily identified as a common fungus such as the mucor or aspergillus.

COMMENT

The direct microscopic examination was found to be satisfactory for the diagnosis of tinea infections of the scalp and beard if the hairs were selected with care. In the preparations from other areas however the chance of finding mycelia was less and mistakes may

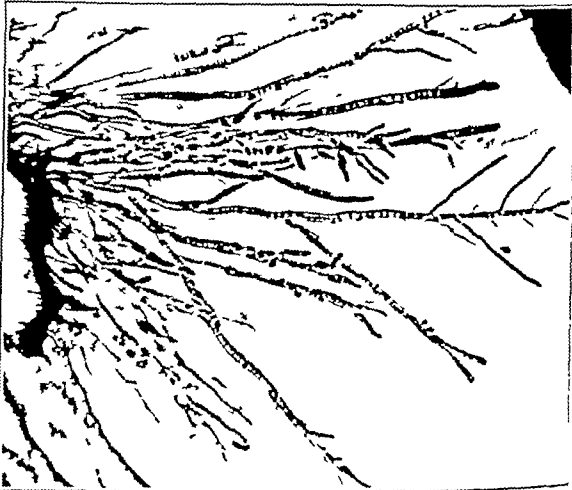


Fig. 3—Two day old culture

be made owing to the presence of so-called monic structures and other artefacts. In every case it is desirable to have a culture of the micro organism to establish the diagnosis.

Results Obtained by Three Methods of Mycologic Diagnosis

Final Clinical Diagnosis	Number of Cases	I		II				III			
		Direct Microscopic Examination (20% Potassium Hydroxide)		Sabouraud's Agar Medium				Hanging Drop Preparation			
				Positive		Negative		Positive		Negative	
				Number	Average Time Days	Number	Time Days	Number	Average Time Days	Number	Time Days
Tinea of beard and scalp				6		1	30	—	2.5	0	
Tinea of glabrous skin	10	4	6	8		2	30	8	1.1	0	
Tinea of axillae and groin	4	1	3	—		1	30	4	1	0	
Tinea of hands (eczematoid or pustular)	12	1	10	1		8	30	1	2	1	
Tinea of feet (eczematoid or interdigital)	1	1	0	1	4	1	30	1	10	1	
Tinea of nails	9	2	7	1	3	3	30	1	10	1	
Total cases of tinea	4	16	22	31	6.1	1	30	1	1	1	
Total cases of other conditions	42	0	41	1	3.4	—	30	1	1.5	—	

culture mycelial growth was demonstrable in thirty-five cases in an average time of 1.8 days. In at least half of these it was clearly visible in twenty-four hours with the aid of the microscope. The growth usually occurred from a number of different points and this fact is of value in distinguishing a false positive due to chance contamination.

Of the forty-two control cases of other conditions none showed mycelia by the direct procedure. Mycelial growth occurred in six cases on Sabouraud's agar

The in situ culture method has permitted microscopic examination of the hyphae and in those cases in which spores developed these could also be studied in their natural growing relationships. No attempt has been made in this study to classify the organism found as we were interested here primarily in developing a cultural method suitable for early diagnosis. If exact classification is desired culture on Sabouraud's or other special agar mediums will be necessary. Recently we have found it a convenient workman-

to prepare two hanging drop cultures from each case when first seen. If these showed growth one was then inoculated on Sabouraud's agar medium for further study.

A relatively small percentage of positive cultures was obtained from the control groups of cases. This was contrary to the observations of Bloch⁵ and of Benham and Hopkins⁶ who reported the finding of fungi on the skin of the majority of normal individuals examined. Perhaps the difference may be explained by the fact that we cleansed the skin thoroughly with soap and water before taking the scrapings.

The final clinical diagnosis was open to question in a few cases, especially those of the pustular lesions of the hands. Some of these may have been trichophytids and others bacterial infections.

SUMMARY

1 Of the forty-eight cases of tinea infection studied direct microscopic examination demonstrated mycelial filaments or spores in 33 per cent.

2 Culture of Sabouraud's agar medium gave a positive growth in 64 per cent of the cases in an average time of 61 days.

3 The hanging drop culture method described in this paper showed a positive growth in 72 per cent of the cases in an average time of 18 days.

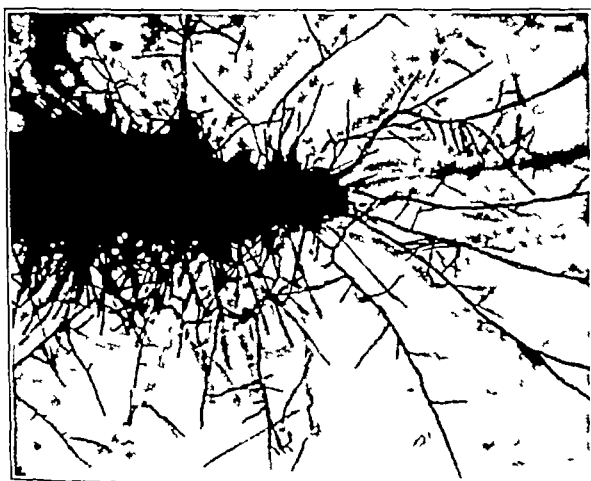


Fig. 4—Four day old culture of a hair

4 The hanging drop culture was found to be the most useful laboratory aid in the diagnosis of tinea infections, not only because it is dependable but also because it is simple, inexpensive and requires a very short time to demonstrate growth of the organisms.

⁵ Bloch Bruno Brit J Dermat & Syph 42: 569 (Dec.) 1930

⁶ Benham Rhoda W. and Hopkins Anne McH. Yeastlike Fungi Found on the Skin and in the Intestines of Normal Subjects Arch Dermat & Syph 28: 532 (Oct.) 1933

The First Accurate Description of the Pelvis—We are indebted to Andreas Vesalius (1543) for the first accurate description of the pelvis. Prior to the publication of his observations it had generally been believed that the birth of the child could not be effected until the pelvic cavity had become increased in size by the separation and gaping of the pelvic bones. Vesalius demonstrated the fallacy of this conception and showed that the pelvis for practical purposes should be considered as an unyielding bony ring.—Stander H. J. Williams Obstetrics New York: D. Appleton-Century Company, 1936, page 1.

DIAGNOSIS OF UNDULANT FEVER

THE OPSONOCYTOPHAGIC, ALLERGIC AND
AGGLUTINATION REACTIONS

ALVIN E. KELLER, M.D.

CRIT PHARRIS, M.D.

AND

W. H. GAUB, C.P.H.

NASHVILLE, TENN.

The diagnosis of *Brucella* infections in man has usually been confirmed by a positive agglutination test or a positive blood culture. The agglutination reaction is of especial value, usually during the febrile stage of the disease, and for varying periods after the temperature has become normal. There may be marked variations in both the regularity and the titer of this reaction. A positive agglutination reaction is of great significance, but a negative reaction cannot be relied on particularly in this disease. A positive blood culture is diagnostic of undulant fever but there are certain difficulties which have not been overcome by the average laboratory in obtaining growth of the organism so that at the present time only a small percentage of cases are diagnosed by this method.

The allergic skin reaction is considered to be a dependable test to determine whether or not an individual is or has been infected with *Brucella*. It may be used in active cases or as an epidemiologic procedure in population groups to determine the incidence of infection. Although infected persons can be detected by the skin test, it does not give any information as to whether the infection is active or whether the individual is immune. The symptoms that the patient shows may be due to some other cause and a positive skin test may be an incidental observation.

In 1933 Huddleson, Johnson and Hamann¹ reported the results of their studies on the opsonocytaphagic activity of the blood and the allergic skin reaction in brucellosis. They stated that in vitro the phagocytosis of *Brucella* by the polymorphonuclear leukocytes in whole citrated blood is an expression of immunity to *Brucella* and an indication of the progress toward recovery in active infection. They also stated that a low phagocytic activity in conjunction with a negative allergic skin test is evidence of susceptibility to *Brucella* infection and that a positive allergic skin test in conjunction with a negative or low opsonocytaphagic activity of the blood is evidence of infection with *Brucella* without immunity.

Since *Brucella* infections are being discovered more frequently and are probably present to an appreciable extent as asymptomatic infections, any method that can be used to determine the immunity status of an individual or of a group of persons to undulant fever will help either to confirm the diagnosis or to rule out infection with this group of organisms.

Our purpose in this discussion is not to point out either the sources of infection, modes of transmission or the clinical manifestations of *Brucella* infections but

From the Department of Preventive Medicine and Public Health of Vanderbilt University School of Medicine and the Tennessee State Department of Public Health.

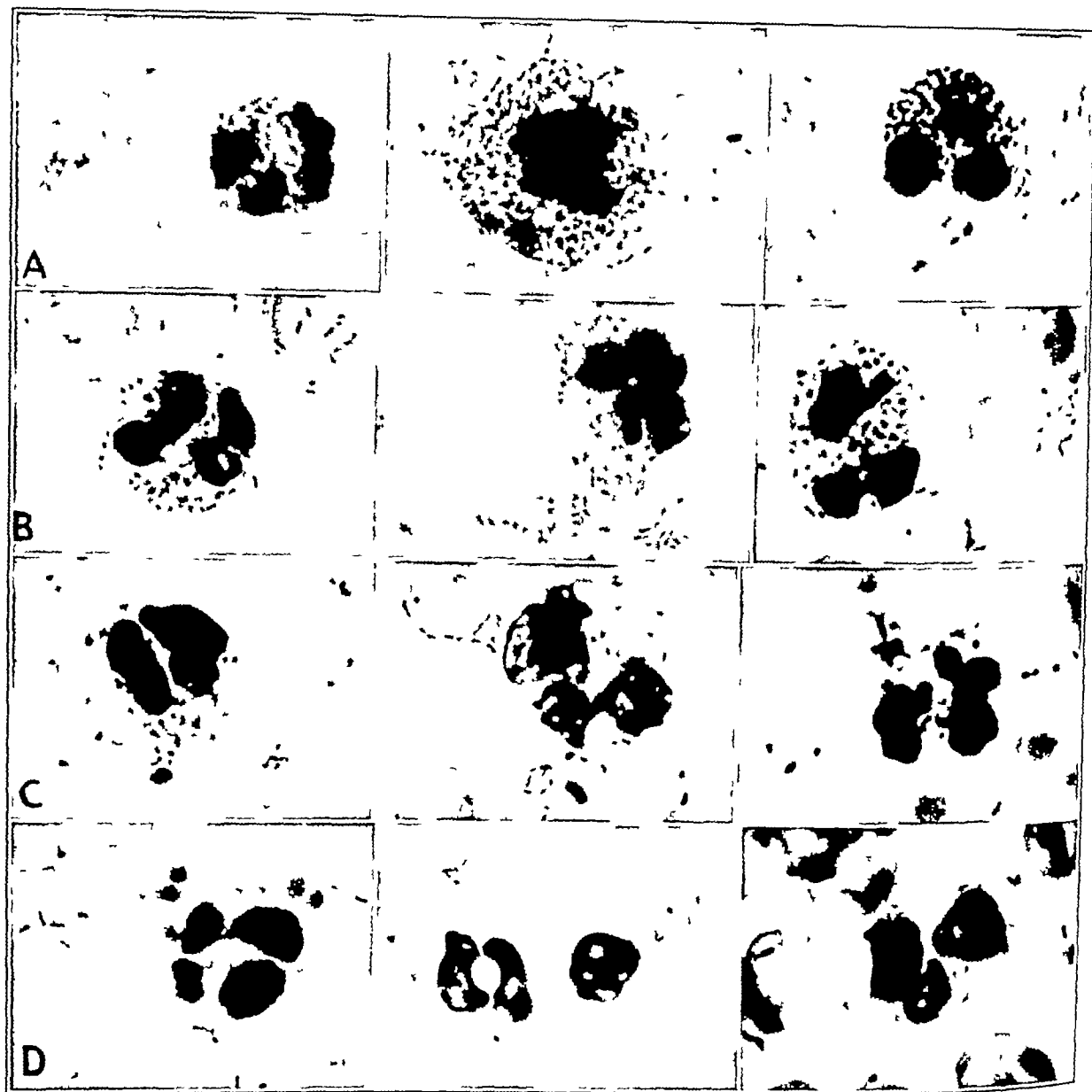
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

¹ Huddleson I. F., Johnson H. W. and Hamann E. E. A Study of the Opsonocytaphagic Power of the Blood and Allergic Skin Reaction in *Brucella* Infection and Immunity in Man. Am. J. Pub. Health 23: 917-929 (Sept.) 1933. Huddleson I. F. *Brucella* Infections in Animals and Man. Commonwealth Fund, 1934.

to evaluate the results obtained by means of the agglutination, allergic and opsonocytaphagic tests on certain groups of individuals under varied conditions.

The technics for the skin test and the opsonocytaphagic test employed in this investigation were those described by Huddleson, Johnson and Hamann. The material used for the skin test was supplied by Dr. I. Forest Huddleson and was the same that he employed

infiltration following the injection which should be interpreted as a nonspecific reaction. In certain individuals who are markedly hypersensitive to the Brucella protein, the positive skin reaction may be associated with fever, general malaise and chilly sensations, symptoms of which the patient described as being similar to those which were present when he had active clinical manifestations of the disease.



Various degrees of phagocytosis of Brucella. A marked B moderate C slight D negative

in his own work. This material consists of a soluble nucleoprotein fraction of the three species of Brucella in 1:1000 dilution in slightly alkaline physiologic solution of sodium chloride. In the performance of the test, 0.1 cc. of the solution is injected intracutaneously. The allergic test should be read forty-eight hours after the injection is made in order to allow non-specific or pseudopositive reactions to subside.

A positive skin reaction depends on the occurrence of edema of varying degree at the site of injection. There is usually erythema associated with the swelling, but erythema without edema should not be considered as a positive reaction. There may be a small area of

It was found by Huddleson and his associates that in the blood of normal individuals the polymorphonuclear leukocytes showed phagocytic activity. These investigators also found that by the addition of sodium citrate in varied amounts to whole blood phagocytosis could be inhibited, retarded or unaffected and that a concentration of sodium citrate of 0.8 per cent is satisfactory for differentiating the phagocytic activity of individuals who may be susceptible to infection with Brucella.

In the performance of the opsonocytaphagic test the bacterial suspension should be fresh and contain a sufficient number of organisms. In our experience a con-

centration of not less than six billion *Brucella* per cubic centimeter is necessary. Owing to the small size of *Brucella* organisms it is necessary to differentiate between the normal granulations found in polymorphonuclear leukocytes and the phagocytized bacteria. The strain of *Brucella* used for our suspensions was

TABLE 1—Classification of Phagocytosis Used by Huddleson, Johnson and Hamann to Determine Opsonocytophagic Activity of Blood

Classification	Number of Bacteria per Polymorphonuclear Leukocyte
1 Negative	None
2 Slight	1 to 20
3 Moderate	21 to 40
4 Marked	41 or more

TABLE 2—The Diagnosis of Undulant Fever According to Results of the Agglutination, Allergic and Opsonocytophagic Tests, Rearranged from Huddleson, Johnson and Hamann

Agglutination Test	Allergic Skin Test	Opsonocytophagic Power of Blood	Status Toward <i>Brucella</i>
—	—	Cells negative to 20 per cent slight phagocytosis	Susceptible
—	+	Cells negative to 40 per cent marked phagocytosis	Infected
+	+	Cells negative to 40 per cent marked phagocytosis	Infected
—	+	Cells 60 to 100 per cent marked phagocytosis	Immune
+	+	Cells 60 to 100 per cent marked phagocytosis	Immune

TABLE 3—Results of Skin, Opsonocytophagic and Agglutination Tests on Four Patients with Undulant Fever

Patient	Skin Test	Local Skin Reaction	General Reaction	Opsonocytophagic Test*				Agglutination Test	Onset of Illness
				Ma	Mo	S	N		
1	Positive	Marked	Marked	18	0	0	0	1:100	4 months
2	Positive	Marked	None	20	0	0	0	Neg	10 months
3	Positive	Moderate	None	16	6	3	0	1:80	4-6 weeks
4	Positive	Moderate	Slight	11	12	3	0	1:20	Chronic relapsing type 17 mo

* Ma marked phagocytosis Mo moderate phagocytosis S slight phagocytosis N no phagocytosis

Brucella abortus, strain 456, supplied to the State Health Department Division of Laboratories by the National Institute of Health

The term "opsonocytophagic" was used by Glynn and Cox² in 1910 to indicate the phagocytic activity of blood in the presence of serum opsonins and homologous leukocytes. To perform the opsonocytophagic test, 5 cc of venous blood is obtained. This is placed in a tube containing 0.2 cc of 20 per cent sodium citrate in physiologic solution of sodium chloride. The final dilution of sodium citrate is 0.8 per cent, which according to Huddleson, Johnson and Hamann has two purposes: to prevent clotting of the blood and to inhibit the *Brucella* opsonins, which may be present in the serum of normal individuals. The test consists of mixing 0.1 cc of the patient's citrated blood with an equal quantity of a live twenty-four hour saline suspension of *Brucella* organisms. This mixture is shaken and then incubated at 37 C for thirty minutes, after which the tube is shaken again and a small amount of

the mixture withdrawn and placed on a clean slide. A smear is made and stained with Hasting's blood stain. Twenty-five polymorphonuclear neutrophilic leukocytes are then examined and the degree of phagocytosis is recorded for each cell according to the classification given in table 1.

In uninfected or normal individuals it is not unusual to find some of the polymorphonuclear neutrophils showing slight phagocytosis. As many as ten or fifteen of the twenty-five cells examined may show this degree of phagocytosis and there also may be an occasional cell showing a moderate or marked degree of phagocytosis. The accompanying illustration shows photomicrographs of polymorphonuclear neutrophilic leukocytes with slight, moderate and marked phagocytosis, and also cells without phagocytosis.

To determine the status of individuals with regard to infection with *Brucella*, Huddleson has proposed the system given in table 2.

The present investigation was conducted to determine the accuracy and specificity of these tests under certain conditions, namely, (1) in patients in the active stage or who have recovered from undulant fever, (2) in individuals exposed either through drinking infected cow's milk or through routine laboratory work, and (3) in patients with other diseases. In the first group there were four patients, two of whom were considered to be in the active stage of the disease or in the stage of recovery. The other two patients had been afebrile from six to fifteen months before the tests were conducted. The second group consists of twenty-nine patients with positive skin tests among a group of 576 persons. Of this number 560 were in an institution in Tennessee which, owing to a breakdown in the pasteurization plant, were served raw milk for approximately one month. This milk was obtained from a herd of 127 cows, of which 44 per cent were found to have positive agglutination tests for Bang's disease. The

TABLE 4—Results of Agglutination Skin and Opsonocytophagic Tests on Twenty-Nine Persons

Case	Agglutination Test	Skin Test	Local Skin Reaction	General Reaction	Opsonocytophagic Test			
					Ma	Mo	S	N
1	1:20	Positive	Moderate	Marked	13	7	5	0
2	—	Positive	Marked	Marked	21	4	0	0
3	—	Positive	Moderate	—	17	7	1	0
4	—	Positive	Marked	—	23	2	0	0
5	—	Positive	Moderate	—	23	0	0	0
6	—	Positive	Moderate	—	23	2	0	0
7	—	Positive	Moderate	—	14	6	3	0
8	—	Positive	—	—	21	3	1	0
9	—	Positive	Slight	—	20	3	0	0
10	—	Positive	Slight	—	18	7	0	0
11	1:160	Positive	Moderate	Moderate	2	20	1	2
12	—	Positive	Marked	—	1	4	14	0
13	—	Positive	Moderate	—	3	0	0	7
14	—	Positive	Slight	—	4	10	8	3
15	—	Positive	Moderate	—	1	4	10	10
16	—	Positive	Marked	—	2	5	6	12
17	—	Positive	Moderate	—	3	7	12	7
18	—	Positive	Moderate	—	8	9	8	0
19	—	Positive	Slight	—	0	6	6	8
20	1:80	Positive	Marked	—	6	0	4	6
21	—	Positive	Marked	—	0	2	20	3
22	—	Positive	Moderate	—	1	3	18	3
23	—	Positive	Moderate	Moderate	0	0	6	19
24	—	Positive	Moderate	—	0	0	7	18
25	—	Positive	Moderate	—	2	2	7	14
26	—	Positive	Slight	—	0	0	6	19
27	—	Positive	Slight	—	0	0	5	20
28	—	Positive	Marked	Marked	0	0	0	23
29	—	Positive	Marked	Marked	0	0	0	23

remaining sixteen in this group were technicians performing routine laboratory procedures. The third group consists of forty-four patients with other diseases in the wards of the Vanderbilt University Hospital. A skin test, an opsonocytophagic reaction and an agglutination test were performed on each individual in these three groups.

² Glynn, E. E. and Cox, G. L. Variations in the Inherent Phagocytic Power of Leukocytes. *J. Path. & Bact.* 14: 90-131, 1910.

Table 3 shows the results in patients who had either recovered from undulant fever or who were showing symptoms. The results indicated in the table are those obtained at the time the tests were performed. In patient 1 the diagnosis of undulant fever was based on a positive agglutination test (1:640) four months previously. In patient 2 the agglutination test was positive (1:640) fifteen months before the present tests. The diagnosis in patient 3 was based on a positive agglutination test (1:80) and suggestive clinical history. It was afterward found that this patient had a positive skin test and an opsonocytophagic test which showed marked phagocytosis in 60 per cent of the polymorphonuclear leukocytes examined. The diagnosis in patient 4 was based on a history of recurring attacks of

at the same time at which the other tests were done, showed titers varying from 1:20 to 1:160 in three of the four patients.

In the second group examined there were 576 individuals who were not ill but who were living or working under conditions favorable for infection with *Brucella*. In 547 persons in this group the agglutination reactions and skin tests were negative. All the opsonocytophagic tests in these 547 persons showed phagocytosis in no greater degree than would be found in the blood of normal or uninfected individuals.

In the remaining twenty-nine persons in this group positive skin tests were found. In all skin tests the area of edema was measured in two diameters at right angles to each other. The skin reactions varied in size

TABLE 5—Results of Agglutination, Skin and Opsonocytophagic Tests on Forty Four Patients with Diseases Diagnosed as Other than Undulant Fever

Case	Sex	Age	Color	Temperature at Time of Test	Duration of Fever	Agglutination Test	Skin Test	Opsonocytophagic Test				Diagnosis
								Ma	Mo	S	N	
1	♀	32	W	100.0	2 wks	1:80	P	20	3	2	0	Bronehopneumonia (?) undulant fever
2	♀	7	W	103.0		N	N	0	0	0	25	Typhoid fever
3	♀	5	W	102.0		N	N	0	0	0	25	Typhoid fever
4	♀	3	N	Normal		N	N	0	0	1	24	Typhoid fever
5	♀	25	W	102.0		N	N	0	0	0	25	Typhoid fever
6	♀	25	W	102.0	3 wks	N	N	0	0	2	23	Paratyphoid fever
7	♀	35	W	Normal		N	N	0	0	0	25	Recovered typhemia
8	♀	35	N	Normal		N	N	0	0	0	25	Recovered typhemia
9	♀	50	W	99.0	2 wks	N	N	0	0	1	24	Diabetes
10	♀	40	W	101.0		N	N	0	0	2	23	Diabetes
11	♀	14	W	100.5	1½ wks	N	N	0	0	1	24	Tuberculous meningitis
12	♀	12	W	99.6	6 wks	N	N	0	0	1	24	Tuberculosis of lungs and bone
13	♀	65	W	99.6	12 mos	N	N	0	0	0	25	Cholecystitis cholelithiasis
14	♀	26	W	102.0	2 wks	N	N	0	0	3	22	Rheumatic fever
15	♀	23	W	100.5	8½ wks	N	N	0	0	9	16	Lung abscess
16	♀	10	W	100.0	6 days	N	N	0	0	2	23	Lobar pneumonia
17	♀	29	N	101.4	3½ wks	N	N	0	0	1	24	Syphilitic aortitis
18	♀	35	N	Normal		N	N	0	0	1	24	Syphilis gonorrhea tuberculosis
19	♀	76	W	100.0		N	N	0	0	9	16	Cardiovascular disease
20	♀	8	W	101.0		N	N	0	0	0	25	Infectious arthritis
21	♀	10	N	Normal		N	N	0	0	2	23	Rheumatoid arthritis
22	♀	10	W	101.0		N	N	0	0	0	25	Nephrosis
23	♀	42	W	101.5		N	N	0	0	0	25	Hydronephrosis
24	♀	27	W	101.6	2½ wks	N	N	0	0	2	23	Chronic nephritis
25	♀	32	W	101.0		N	N	0	0	4	21	Ulceration of the vulva
26	♀	5	N	102.0	3 wks	N	N	0	0	1	24	Rhinopharyngitis
27	♀	0	W	101.6	6 wks	N	N	0	0	0	25	Osteomyelitis
28	♀	17	W	103.0		N	N	0	0	0	25	Fracture of the nose
29	♀	33	N	Normal		N	N	0	0	0	25	Appendicitis
30	♀	23	W	Normal		N	N	0	0	0	25	Subdural hematoma
31	♀	13	W	100.0		N	N	0	0	4	21	Hernia
32	♀	46	W	Normal		N	N	0	0	4	21	Hernia
33	♀	16	W	99.6		N	N	0	2	4	19	Scoliosis
34	♀	60	N	99.6		N	N	0	0	0	25	Carcinoma of breast
35	♀	48	W	99.3	1 wk	N	N	0	0	3	22	Hydrocele
36	♀	22	W	101.0		N	N	0	0	0	25	Infected wound
37	♀	83	W	Normal		N	N	0	0	0	25	Renal calculi
38	♀	70	W	Normal		N	N	0	0	0	25	Carcinoma of the skin
39	♀	49	W	Normal		N	N	0	0	3	22	Colles fracture
40	♀	26	W	100.5		N	N	0	0	0	25	Pyrexia of unknown origin
41	♀	23	N	101.0	6 days	N	N	0	0	7	18	Malaria
42	♀	8	W	103.0	8 days	N	N	0	0	0	25	Pyrexia of unknown origin
43	♀	40	W	Normal		1:20	N	0	1	13	11	Bronchitis
44	♀	35	W	100.0		1:40	N	0	0	10	15	Pellagra

fever over a period of seventeen months. A diagnosis of undulant fever was made by her physician.

It will be seen from this table that all the patients who had had undulant fever or who were in the active stage of the disease exhibited positive skin tests. Following the skin test, two of the four patients (1 and 4) developed constitutional symptoms, such as increase in temperature, chilly sensations and general malaise. In three of these patients (1, 2 and 3) 60 per cent or more of the twenty-five polymorphonuclear leukocytes examined showed marked phagocytosis, which would indicate immunity. There has been no recurrence of symptoms in any of these patients since recovery from the original attack except in patient 4, and in this instance the opsonocytophagic picture was indicative of an active infection. This patient was having an exacerbation of undulant fever at the time the tests were made and had been ill periodically for approximately seventeen months. The agglutination reactions performed

from 2.4 to 3.6 cm in one diameter and from 3.6 to 9.8 cm in the other diameter. Following the skin test four persons developed a marked systemic reaction and two developed a moderate systemic reaction. All these skin reactions cleared up rapidly and in no instance was ulceration noted. Twenty-seven of the twenty-nine individuals in this group were retested and in each case the results of the opsonocytophagic, skin and agglutination reactions were in agreement with the original tests.

In three of the twenty-nine persons with positive skin tests the agglutination titers varied from 1:20 to 1:160.

The results of the opsonocytophagic tests according to the interpretation of Huddleson et al. showed that in ten of the twenty-nine patients 60 per cent or more of the polymorphonuclear leukocytes examined showed marked phagocytosis, indicating immunity to *Brucella*. Of the remaining patients in this group twelve had opsonocytophagic tests in which a majority of the leukocytes examined showed phagocytosis of various

degrees, which would indicate either infection or a developing immunity to *Brucella*. The seven other patients in this group had opsonocytophagic tests in which no phagocytosis could be seen in a majority of the polymorphonuclear leukocytes examined, indicating infection but no immunity to *Brucella*. Table 4 shows the results of these tests.

To determine the specificity of these tests, forty-four patients suffering from a wide variety of diseases were tested in a similar manner as the individuals in the other groups. Most of the patients in this group were febrile at the time of testing. Table 5 shows the results.

There was a complete correlation in the results of the three tests in forty-two of the forty-four patients tested in this group. In forty-one of these patients the three tests were negative. Patient 1 was admitted to the hospital with a questionable diagnosis of bronchopneumonia. The pulmonary signs cleared up but fever persisted. The *Brucella* skin test was found to be positive, after which positive agglutination and opsonocytophagic tests were obtained. This patient made an uneventful recovery. Four weeks after she was discharged from the hospital another agglutination reaction in a titer of 1:160 was obtained. The opsonocytophagic test was also repeated and all the polymorphonuclear leukocytes examined showed marked phagocytosis.

In two patients in this group the agglutination reactions showed titers of 1:20 and 1:40, which were not considered diagnostically significant. One of the patients (1:40) had pellagra and had been having fever of undetermined origin for several weeks. The other patient was afebrile and had had bronchitis. These observations may have been accidental or the agglutination reactions may have resulted from infection with *Brucella*, in which case there was no complete agreement of the various tests. In these two cases the skin tests were negative.

COMMENT

The data presented agree with those reported by Huddleson and his associates for individuals who are either in the active stage of undulant fever or who have recovered from *Brucella* infections and in persons who are living or working under conditions of exposure to this group of organisms.

The results of the intracutaneous and the opsonocytophagic tests in a group of forty-four patients with a wide variety of febrile and nonfebrile conditions indicate that the tests are probably specific for *Brucella* infections. In one patient in this series a diagnosis of undulant fever was made by means of these tests. In all but two patients, who had agglutination titers of 1:20 and 1:40, these tests were negative.

In evaluating the three tests as to their usefulness in the diagnosis of undulant fever, the results obtained indicate that the agglutination test is most dependable in patients who are in the active stage of the disease or who have recently recovered. In individuals who have been infected with *Brucella* the agglutination test may or may not be positive. Under these conditions results obtained from the examination of serums from groups of individuals to determine the incidence of undulant fever would not be reliable. It is also possible that in patients suffering from other diseases a low titer agglutination may be obtained which may be suggestive of infection with *Brucella* but which is not diagnostically significant.

The intracutaneous test is probably the most dependable procedure in determining an allergic state resulting

from *Brucella* infection. It was positive in each of the four patients with undulant fever and in twenty-nine, or 5 per cent, of 576 persons living or working under conditions favorable to infection with *Brucella*, while only one of the forty-four patients diagnosed originally as having conditions other than undulant fever showed a positive skin test. The intracutaneous test indicates a state of allergy resulting from infection with *Brucella* and may be used as an epidemiologic procedure to determine the incidence of *Brucella* infection. A positive skin test may indicate infection or may be found in an individual who has been infected but who has developed an immunity to *Brucella*.

To determine the immunity status of individuals, the opsonocytophagic test may be employed in conjunction with the intracutaneous test. The absence of marked phagocytic activity of the polymorphonuclear leukocytes in a patient with a positive skin test indicates infection and a lack of immunity. The presence of marked phagocytic activity would indicate either a developing or an established immunity. If marked phagocytic activity and a positive skin test are demonstrated in a patient with fever, it is likely that the fever is due to some disease other than undulant fever. These tests, therefore, may be used as valuable aids in differential diagnosis.

CONCLUSIONS

The results of these observations indicate that the intracutaneous test may be used to determine a state of allergy resulting from *Brucella* infection. This test alone may be useful in determining the presence of infection with *Brucella* in individual patients or the incidence of this infection in groups of the population. However, it gives no indication of the immunity status of the patient. This may be determined by means of the opsonocytophagic test. It is possible with the use of these two tests to determine whether individuals are susceptible, infected or immune with regard to undulant fever.

This discussion presents our experience up to the present time with these procedures. Further studies are planned in order to confirm the observations represented in the data covered in this paper.

ABSTRACT OF DISCUSSION

DR W S LEATHERS, Nashville, Tenn. The prevalence of undulant fever in the United States is of importance especially from the standpoint of the usually prolonged attack and the marked debilitating effect on the patient. This disease is not at present a major public health problem as related to the human being, although it is exceedingly important from a medical as well as from a preventive point of view. The average duration of an attack of undulant fever is about four months. However, there may be several recrudescences. The fever may recur at long intervals over a period from one to two years. Only 2 to 3 per cent of the patients die. It is also of interest to note that it occurs much more frequently among males than among females. The ratio is about two to one. The principal reason why undulant fever is not more prevalent is the low infectivity or degree of susceptibility of the population. Obviously an immunity has been established as a result of individuals obtaining small doses of infection chiefly through milk. Moreover, the strain *Brucella* probably does not multiply in milk, therefore if the milk from one cow is infected and is mixed with a large quantity of milk for distribution to a community the dosage becomes diluted and as a consequence serves only to stimulate immunity in the individual who drinks the milk. Dr Keller and his associates have presented a discussion with particular reference to the accuracy and specificity of the agglutination, allergic and opsonocytophagic reactions as procedures which may be effectively applied in differential diagnosis and in the epidemiologic study of this disease in the

individual and in groups of the population. The agglutination reaction is of particular value in the diagnosis of undulant fever in the acute stage. Although the blood culture is also of great importance as a confirmatory procedure, the agglutination reaction cannot be used to determine the incidence of infection in groups of the population, owing to difficulties involved in culturing the organism. It is, however, of much value in locating the infection among cows. It has also been pointed out that this test cannot be used to determine the immunity status of the individual. The allergic reaction, or skin test, is of particular importance to determine this infection in an individual, in the study of immunity and especially in clearing up obscure cases of the disease. The opsonocytophagic reaction is conclusive in determining the immunity status of a person. The degree of immunity in an individual may be indicated roughly by the number of phagocytized bacteria by the polymorphonuclear leukocytes. The authors have shown the relative clinical and public health value of these tests, and the facts presented apparently confirm the work that has been done by Huddleson and his associates. It has been shown in this investigation that the allergic reaction of undulant fever does not occur in other diseases, therefore this fact makes this test more valuable as a diagnostic procedure.

DR. J. N. BAKER, Montgomery, Ala. The diagnosis of undulant fever is often most difficult. In many cases the symptomatology either is indefinite or may resemble that of other diseases. Recently in Montgomery there was a series of cases in which the chief complaint was a severe pain in the lower right quadrant. Before the true nature of the disease was recognized, surgical intervention was practiced in one case (appendix operation). More careful and extended examination revealed that all the patients were suffering from undulant fever. The agglutination test, because of its ease in performance and its specificity, has been the reaction of choice in most laboratories. Here the matter of technic, which involves the choice of strain to be used, the preparation of the antigen, the time of incubation and other details, are of extreme importance. The question of the proper titer to be obtained before a positive diagnosis can be made is a perplexing one. Some workers think that any case showing a titer of 1:80 or above should be considered positive, while others assert that titers of less than 1:500 have little or no significance. On the other hand, by cultural methods it has been shown that certain patients may have the disease and yet never exhibit a titer over 1:15 or 1:30, furthermore, when the results of any agglutination test are considered, the question of past or present infection becomes paramount. Carpenter and Boak (1930) are of the opinion that the agglutinins usually remain for a long time, hence, in the interpretation of positive agglutination reports, the persistence of reacting bodies from a previous infection must always be considered. The blood culture method, besides its inherent technical difficulties, takes too long for an ordinary diagnostic or public health procedure. The same criticism applies to the culture of urine and feces from suspected patients. The intracutaneous test has been used with success by Giordano (1929) and others. In 1934 Huddleson reported a more refined antigen designed to eliminate a certain percentage of the nonspecific reactions, nevertheless, if the test is to be used alone, the following statement of Keller and his colleagues must be borne in mind. The intracutaneous test indicates a state of allergy resulting from infection with *Brucella*. A positive skin test may indicate infection or may be found in an individual who has been infected but who has developed an immunity to *Brucella*. In 1933 Huddleson and his associates developed the opsonocytophagic test, which is really a modification of the old opsonic index test. They recommended its use in conjunction with the skin reaction and stated that valuable information as to the status of the patient could be obtained if the results were properly interpreted. Also the agglutination test was employed. The results of Keller and his associates corroborated those of Huddleson and his co-workers. They indicate the specificity of the combined tests, intracutaneous and opsonocytophagic in individuals who have or have had undulant fever and the lack of response in those who have other febrile conditions.

DR. JOHN B. YOLMAN, Nashville, Tenn. These procedures have been a great help in our clinic since they were introduced there by Dr. Keller. In the past we have felt that some cases

of undulant fever were being missed because of the unreliability of the agglutination test, which sometimes has been negative even in the presence of positive cultures. We have been particularly concerned about mild or chronic cases with positive agglutination tests of such low titer that their significance was questionable. With these newer procedures we have been able to use the skin test extensively as a screen, quickly detecting those with evidence of the disease, past or present, and determining the presence of active disease by means of the opsonocytophagic test. By this means the use of the more difficult cytophagic test may be confined to those cases in which there is a likelihood of active infection. I would, however, stress the danger of mistaking a pseudoreaction for a positive skin test. We have had a number of patients with sharp local reactions in twenty-four hours which had cleared completely on the second day. The true reaction is present, even maximum, in forty-eight hours, and unless precautions are taken to follow this criterion, many mistakes will be made. This is the more important because the skin test is the crucial test in distinguishing between noninfected (susceptible) and the infected (nonimmune) groups. In using the combined results of the agglutination, skin and opsonocytophagic tests in individual cases, it must be appreciated that the criteria are not absolute and that borderline stages between susceptible and infected, and between infected and immune, must occur. It is in connection with the former that the skin test is so important. As always, such tests must be interpreted in the light of all the clinical observations, nevertheless, these tests are a great help in the diagnosis of an important but often illusive disease.

THE PARADOXICAL BEHAVIOR OF THE WASSERMANN TEST IN LATENT SYPHILIS

LOUIS CHARGIN, MD

AND

THEODORE ROSENTHAL, MD

NEW YORK

It is well known that, in early syphilis, treatment by any of the modern intensive methods reverses the Wassermann test from positive to negative in a period of about three months in approximately 85 per cent of the cases and that, in the majority of instances, continued treatment by an intensive method insures a continued negative serologic reaction. This behavior of the Wassermann test under treatment in early syphilis is so consistent that it can serve as an experimental criterion of the efficacy of any plan of therapy. By the same token it may be stated that in a given case of syphilis, if the Wassermann test is reversed promptly under therapy and remains negative, the patient is probably suffering from early syphilis. This is so in at least 85 per cent of the cases. This behavior of the Wassermann test, however, does not hold true in the case of latent syphilis. Those experienced in the treatment of large numbers of syphilitic patients are, indeed, well aware of the vacillating character of the Wassermann test in latent syphilis, but the general practitioner is not so informed and is frequently chagrined by the failure of the Wassermann test to exhibit results identical to those observed in early syphilis.

To examine this phase of the subject and to examine the behavior of the Wassermann test in latent syphilis, a series of 500 consecutive case records was studied. By far the majority of these patients was treated by the chronic intermittent type of therapy (Nei'er) which, as is known, includes the use of arsphenamine and mercury or bismuth compounds given alternately in courses. No case was evaluated unless the patient

From the Central Syphilis Clinic, Department of Health, City of New York.

had had at least two years of treatment, most, however, were under treatment and observation for much longer periods, some ten years or more. The amount of treatment that was administered necessarily varied with the time the patients were under care. As is well known, the chronic intermittent method includes short periods of rest between courses of treatment, and accordingly our patients had varying rest periods, but in addition there were many instances of unauthorized absences on the part of the patients. The analysis, so far as the behavior of the Wassermann test is concerned, reveals that the cases fall into three groups:

(a) Those in which the Wassermann test was reversed and remained so during the entire period of treatment and observation.

(b) Those in which the Wassermann test remained persistently and consistently positive (two plus or over), in other words, so-called Wassermann fast cases.

(c) Those in which the Wassermann test fluctuated while under treatment at will from various grades of positive to negative or the reverse without apparent relation to the amount and frequency of treatment or rest periods.

It is this paradoxical behavior of the serologic test in this type of case (c) that forms the particular object of this presentation.

While the last mentioned fact must be known to the syphilologist, it was surprising to note its strikingly high incidence. For this reason alone, it merits wider publicity, particularly among those who treat syphilis only occasionally. It is necessary to emphasize that in this presentation we are concerned chiefly with calling attention to the peculiar and totally unpredictable behavior of the Wassermann test in latent syphilis under treatment or observation.

The serologic tests in all the cases were done in a single laboratory and by a constant technic, and accordingly their evaluation is on the same basis.

SUMMARY OF ANALYSIS

1 In a series of 500 patients with latent syphilis, the Wassermann test was reversed to negative in approximately 10 per cent, remained persistently positive (Wassermann fast) in 23 per cent, and showed a paradoxical behavior in 67 per cent. These patients were treated by the chronic intermittent method (Neisser). It is possible that treatment by the continuous method as outlined by the Cooperative Clinic Group would yield better results, such a study is now in progress.

2 In latent syphilis, while the Wassermann test following treatment is frequently reduced in its positivity or even reversed to negative, almost as frequently it remains uninfluenced by treatment or is found to be of a higher degree of positivity after treatment than before.

3 During rest periods, authorized or unauthorized, the Wassermann test often fluctuates without any apparent reason.

4 In a considerable number of patients the Wassermann test, negative at the beginning of treatment, unexpectedly becomes two plus or over at the end of treatment, this unusual behavior cannot be looked on as a provocative test, since these were syphilitic patients, with many positive Wassermann tests just prior to the paradoxical reversal.

5 Even when large amounts of treatment were given, the Wassermann test fluctuated between negative and positive, almost at will.

6 In a number of patients it was observed that at the outset of a course of treatment the Wassermann

test was positive, remained positive at the completion of the course, and after a rest interval of weeks or months would suddenly become negative.

7 In a number of patients in whom treatment was discontinued, for one reason or another, but subjected to repeated Wassermann tests subsequently, the test again showed paradoxical behavior, progressing from positive to negative unexpectedly.

CONCLUSIONS

1 The behavior of the Wassermann test in latent syphilis under therapy cannot be predicted with any degree of certainty in a given patient.

2 The Wassermann test in latent syphilis is an unreliable guide to therapy.

3 As a corollary, one should treat the patient and not the serologic reaction.

4 The physician should be cognizant of this paradoxical behavior of the Wassermann test in latent syphilis and should utilize this knowledge in discussing treatment and prognosis with the patient.

1 West Eighty-Fifth Street—115 West Eighty-Sixth Street

SCHISTOSOMIASIS

REPORT OF TWO CASES

AMANDA HOFF, M.D.

NEW YORK

Schistosomiasis is usually classified as a tropical disease, but while it is true that the condition is unusual in the United States a case is encountered occasionally. Although the literature on this disease in the United States is scarce, there have undoubtedly been cases occurring in foreigners from the tropics which have been overlooked, owing to lack of specific information.

Briefly, there are three types of schistosomiasis—*Schistosoma mansoni*, *S. haematobium* and *S. japonicum*—which occur in various tropical countries. The infestation takes place through intermediary hosts, various species of fresh water snails which have become infested with the ova from the excreta of patients suffering with the disease. After a stage of development in the snails the infected larvae or cercariae enter the patient by penetration of the skin. The infestation must therefore take place either through the patient's bathing in infested waters or, in rare cases, through the swallowing of the cercariae, which penetrate the mucous membrane. The early symptoms consist of a skin eruption. Later symptoms may arise, varying according to the specific localization of the parasites in the bladder veins (*S. haematobium*) or in the rectal veins (*S. mansoni* and *S. japonicum*). Cystitis or mucosanguineous diarrhea occur at this stage, later the parasites and their ova find their way to the liver and mesentery and may cause a very severe liver cirrhosis, with splenomegaly. The latter, and usually fatal, stage may often be prevented if the diagnosis is made in the early stages of the infestation and treatment immediately instituted.

The presence of schistosomiasis may be especially suspected in cities of both coasts of the United States, where shipping from all parts of the world is the means of importing the disease. As far as is known at present, the snails that serve as specific intermediate hosts for the various schistosomes are not found in the United States. The public health aspects of the disease may therefore safely be ignored in this country,

From the First Medical Division, Bellevue Hospital

as the spread of the malady is impossible where the intermediate host is absent. The importance of the recognition of the disease lies in the fact that the introduction of the specific treatment has resulted in the complete cure of many cases, and that, if untreated, the condition progresses to the stage of liver cirrhosis and various other frequently fatal complications. Cutler¹ reports a case of urinary schistosomiasis in 1926 and reviews the literature up to that time. According to him, twenty-two cases have been reported in the United States up to 1926. In addition to these cases, two *S. japonicum* infestations were reported by Bovard and Cecil.² One of these is the only case reported in the United States in which autopsy studies were included. In Bellevue Hospital the records of the four medical divisions show that there have been but five cases of schistosomiasis since 1913. Most of them were merely incidental manifestations in patients suffering from other conditions. The patients were discharged after a short period of hospitalization. Only two of these cases were treated with antimony and potassium tartrate until found to be egg free, since specific treatment for schistosomiasis was unknown until 1918. There were no deaths or serious complications among them during their hospital stay. All the cases reported in the literature as well as the Bellevue Hospital cases invariably occurred in foreigners of various nationalities who had lived in the United States for a comparatively short while. They include all the varieties of schistosomiasis, depending on the country from which the patient had emigrated.

The diagnosis of schistosomiasis rests mainly on the finding of specific ova in the stools or urine, as the case may be. The symptomatology must be carefully studied and usually provides a clue to the correct diagnosis. Recently, however, diagnosis has been materially aided by the elaboration of specific skin sensitization and complement fixation reactions.³ The antigen for the skin test is derived from the livers of snails infested with schistosome cercariae. A filtered saline extract of the dried powdered livers is sometimes used, the intradermal test is easily made and the reaction consists of an urticarial wheal with pseudopodia and erythematous margins, which usually appears within a half hour.

A delayed type of reaction may also occur in from three to twenty-seven hours. The reaction is a group reaction for all types of schistosomes, as is the case in most of the parasitic skin tests. As there is a high percentage of positive reactions in known cases of schistosomiasis, the test is of great clinical value. The complement fixation test, in which the antigen is made from an alcoholic extract of infected snail livers or of adult schistosomes, has also been used by Fairley,⁴ mainly to determine the true end point of the disease, as the reaction has been found to exist several years after treatment and definitely indicates the presence of living schistosomes.

The prognosis of schistosomiasis varies with the type of infestation. In the haematobium variety the lesions are usually fairly well localized and a fatal outcome is rare. The mansoni and japonicum varieties, however,

as has already been mentioned, progress to liver cirrhosis and usually to a fatal outcome due to hemorrhage from ruptured varices, as in the first case to be reported or to intercurrent infections, such as pneumonia, which are extremely common at this stage.

Up to the introduction of antimony and potassium tartrate for the treatment of schistosomiasis, no effective or specific remedy was available. Among the substances tried had been emetine, calcium chloride, thymol, arsphenamine and innumerable other drugs. None of these were found satisfactory and they have all been discarded. McDonagh first used intravenous antimony for schistosomiasis from 1911 to 1915, but the treatment did not begin to attract wide attention until he and Christopherson in 1918 definitely demonstrated its value.⁵ Antimony and potassium tartrate was the remedy of choice until the introduction of fuadin (neo-antimosan) in 1929-1930. Antimony and potassium tartrate is injected intravenously, usually in a 1 per cent solution. It is often diluted with 60 cc. of physiologic solution of sodium chloride to lessen the irritative effects. A course of twelve injections is usually found sufficient to cause the disappearance of the schistosome ova. The dosage is usually one half 1 and 1½ grains (0.03 to 0.1 Gm.) on alternate days the first week, and 2 grains (0.13 Gm.) thereafter for two further weeks, given on alternate days. Extreme care is necessary during the administration of the drug as leakage into the tissues is apt to cause extensive necrosis. Toxic symptoms that have been noted are cough, nausea, rheumatic pains, vomiting and collapse. Sudden death has occurred from time to time and has been ascribed to the toxic effects of the drug on the heart muscle. The treatment is effective in a large percentage of cases if it is vigorously pursued, and the effect on the ova can be checked by microscopic examination of the stool, when it will be found that they become shriveled and brownish (dead) and finally disappear altogether.⁶

Fuadin,⁶ a trivalent sodium antimony compound, has been recently introduced. It has certain advantages over antimony and potassium tartrate and has been found to be fully as efficacious. The drug may be injected intramuscularly or intravenously, and the total of 40 cc. of a 7 per cent solution is usually administered as follows: first day 15 cc., second 35 cc., third 5 cc., fifth, seventh and ninth 5 cc. each, and eleventh, thirteenth and fifteenth 5 cc. each, a total of 40 cc. None of the toxic symptoms usually encountered in treatment with antimony and potassium tartrate are noted. A slight bradycardia, reduction of pulse by twelve beats at the most has been the only abnormal finding noted. There was only one death in the 2,041 cases reported by Khalil and Betache in 1930. Owing to its ease and safety of administration and the shorter time required for its effect, fuadin should be employed whenever obtainable.⁷

REPORT OF CASES

CASE 1—History.—E. L., a French chief aged 45 a native of Guadeloupe, French West Indies, admitted to the hospital Aug. 7, 1933 complained of swelling of the abdomen of one month's duration.

The past history was negative except for the important fact of his having lived in an area well known as a focus of

1 Cutler, Max. Bilharzia in the United States and Canada. J. A. M. A. 86:816 (March 20) 1926.

2 Bovard, David and Cecil, R. L. Schistosomiasis Japonica—A Clinical and Pathological Study of Two Cases. Am. J. M. Sc. 148:187 (Aug.) 1914.

3 Manson-Bahr, Philip. Tropical Diseases, ed. 7. Baltimore: William Wood & Co. 1921.

4 Fairley, H. Diseases Caused by Trematodes. In Byam, W. and Archibald, P. G. Practice of Medicine in the Tropics. Oxford University Press. 3:1712-1788, 1922.

5 Short, J. J. Schistosomiasis (of Bilharz). As cited in Uncinariasis. J. A. M. A. 72:630 (March 1) 1919.

6 Khalil, Mohamed Bey. Specific Treatment of Human Schistosomiasis. Arch. f. Schiffs u. Tropenhyg. (suppl. 2) 25:112 (1931).

7 Short, J. J. Khalil, Mohamed. Die moderne Therapie der Schistosomiasis. Berlin thesis No. 355, 1926. Seif, El Nasr, Mohamed. Abhandl. über die Schistosomiasis. Beitr. z. l'etude de la splénomégalie égyptienne. Paris thesis, vol. 43.

schistosomiasis and of his habit of frequent bathing in the fresh water streams of the island. He gave no history of skin irritation nor of any suspicious diarrhea either during his stay in Guadeloupe or after his removal to New York six years before his present illness appeared. He had always been in perfect health except for one attack of grip. There was no history of a venereal infection and he was a moderate but never excessive drinker of rum. His present illness began July 2, when he noted progressive swelling of the abdomen and legs accompanied by weakness and loss of weight. He went to the City Hospital, where a paracentesis was done. This was repeated after five days, and he then left the hospital because of failure to improve and came to Bellevue Hospital.

Examination—Physical examination showed that the patient had apparently lost some weight. There were many dilated vessels and angiomas on the skin. The pupils were equal and reacted. The conjunctivae were pale, and there was some sclerosis of the retinal vessels. There was no general glandular enlargement. The lungs showed some diminished breath sounds and a few crepitant rales at both bases. The heart was displaced upward and to the left but was otherwise normal. The abdomen was rounded and the flanks bulged. A fluid wave and shifting dullness were present. The spleen was felt as a large, firm mass occupying half of the left lateral part of the abdomen. The liver percussed and was felt three finger-breadths below the costal margin. Pitting edema of both lower extremities was present.

Laboratory tests The blood Wassermann reaction was reported anticomplementary. A Kahn test was not done. The first blood count, August 9, showed red blood cells 4,100,000, hemoglobin 80 per cent, white blood cells 6,500 polymorphonuclears 25 per cent, lymphocytes 24, eosinophils 50, basophils 1. The x-ray examination was essentially negative. The temperature was 98 F, pulse 60 respiration rate 18 and blood pressure 108 systolic, 76 diastolic. The urine and sputum were normal. Stool examination, September 1, disclosed the presence of the lateral spined ova of *Schistosoma mansoni*. Proctoscopic examination was negative.

Course—Ascites and edema continued. Paracentesis was performed ten times during his stay in the hospital, the fluid removed varying in amount from 5,500 to 10,000 cc. The course of his illness was mainly afebrile but was marked by several episodes in which the temperature rose to 103 F. This on one occasion was accompanied by swelling and redness of the right leg, which was diagnosed as erysipelas. The attack subsided in four days. The patient vomited a small amount of blood on one occasion but otherwise the symptoms were those of the dyspnea and discomfort attendant on the ascites. Treatment was started September 11. A course of antimony and potassium tartrate was given as follows: One per cent solution was administered intravenously in doses of 0.5, 1, 5, 5 and 5 cc. on alternate days, followed by a final dose of 10 cc., a total of 26.5 cc. On several occasions the administration of antimony and potassium tartrate was followed by a violent attack of coughing, but no other ill effects were noted. At the end of this course of antimony and potassium tartrate the eosinophils were 38 per cent and a secondary anemia of red blood cells 3,700,000, hemoglobin 70 per cent had developed. Stools following this course of treatment showed a few disintegrated ova and the patient was therefore started on a course of fuadin. This was administered intravenously in doses of 1.5, 3.2, 5, 5 and 5 cc., a total of 19.7 cc. No ill effects of any kind were noticed following the administration of fuadin. The eosinophils dropped to 18 per cent and the stools became free and remained free from *S. mansoni* ova. Owing to the ascites, which recurred at increasingly short intervals and necessitated repeated paracenteses it was thought advisable to resort to operative measures in an effort to relieve the condition. Omentopexy and splenectomy were performed, December 28, under spinal anesthesia. However the patient became very lethargic following the operation and finally lapsed into coma and died, December 31.

AUTOPSY REPORT

The primary anatomic diagnosis was atrophic cirrhosis of the liver.

The heart showed some coronary sclerosis and there was some atherosclerosis of the aorta.

The lungs showed congestion and edema, and there was evidence of acute purulent bronchiolitis.

When the abdomen was opened, 500 cc. of serosanguineous fluid was found in the peritoneal cavity. The stomach was dilated and showed hemorrhages and the intestine was distended. There were petechial hemorrhages in the colon. Ruptured esophageal varices were present. Microscopic sections showed infiltration of the mucosa and muscularis, with scattered groups of eosinophils. The subserosa showed interstitial collections of groups of lymphocytes and eosinophils. There was perivascular lymphocytic infiltration.

The kidneys were normal except for a small adenoma of the left kidney.

The left testicle was normal. The right one was absent.

The liver was shrunken and well up under the costal margin and adherent to the diaphragm. It weighed 1,500 Gm. The capsule was thick and dull. The surface was diffusely nodular, the nodules being firm and greenish. They were bounded by pinkish cords of stroma, the whole giving the liver a bright, variegated pink and green color. On section, the liver showed increased resistance to cutting. The cut surface was firm and presented a brownish, diffusely granular appearance. On microscopic section the parenchyma was divided into irregular masses by overgrowth of connective tissue stroma in which were proliferated bile ducts and scattered areas of lymphocytic infiltration. Some masses were lobulated with distinct central veins, others were irregular. The liver cells were hypertrophic. A section about a large branch of the portal vein showed areas of more dense fibrosis in which were deposited remnants of schistosome ova each about the size of a giant cell. There was very little tissue reaction about the ova. In one section there was a granuloma in the wall of the portal vein in which there was a large giant cell containing a well preserved ovum with a definite lateral spine. About this giant cell there was a lymphocytic and eosinophilic reaction. The vasa vasorum were dilated.

The spleen, which had been removed at operation, showed diffuse fibrosis. It showed considerable enlargement. There were several areas of calcification, which on section were a mottled yellowish gray. The section showed marked dilation of the endothelial sinuses. These sinuses were filled with red blood cells and many eosinophils. There were several scattered, moderately large areas of dense fibrosis in which there was evidence of interstitial hemorrhage, in and about which were scattered foreign body giant cells. The reticular stroma was thickened by connective tissue. The lymph follicles were hyperplastic. No schistosome ova were present.

The final diagnosis was schistosomiasis, cirrhosis of the liver, chronic interstitial splenitis with eosinophilia, and chronic interstitial inflammation of the large intestine with eosinophilia.

CASE 2—History—R. R., a Puerto Rican youth, aged 19, was admitted to the hospital June 1, 1934 with an infection of the upper respiratory tract. His past and present history in no way suggested parasitic infestation, except for the fact that he had recently come from Puerto Rico and had frequently bathed in fresh water streams of the island. At no time had he had an attack of diarrhea. His present respiratory condition cleared up rapidly and it was only on stool examination that he was shown to be harboring *Schistosoma mansoni*. The stools showed characteristic *S. mansoni* ova as well as ova of hookworm and *Trichiuris*. The physical examination was entirely negative. The liver and spleen were not enlarged. The urine and Wassermann examinations were negative. The blood count showed hemoglobin 85 per cent, red blood cells 4,200,000, white blood cells 8,200, polymorphonuclears 67 per cent, lymphocytes 20 per cent, monocytes 1 per cent and eosinophils 12 per cent. Except for the eosinophilia there was nothing striking in the blood count.

Treatment—A course of fuadin was begun, starting with 15 cc. intravenously, and was continued as in case 1 until 40 cc. had been given. The hookworm ova were eliminated by treatment with carbon tetrachloride following the completion of the fuadin course.

Course—The stools became egg free early in the treatment and there were never any unpleasant reactions. The temperature ranged from 97 to 102 F (infection of the respiratory tract). He was discharged, August 10, free from the parasites as well as the infection of the upper respiratory tract. The patient was followed for several months in the gastro-intestinal clinic and remained egg free and in excellent health. He was seen again recently (April 1936) and was in perfect health.

COMMENT

The first case well illustrates the unfortunate end results of either lack of treatment or equally ineffective belated treatment of schistosomiasis. The absence of the usual dysenteric symptoms in this patient evidently caused the condition to be overlooked for many years, for after the initial warning signals the existence of schistosomiasis may be entirely compatible with perfect health until damage to the liver initiates the secondary phase, that of cirrhosis. This patient's symptoms were entirely referable to his cirrhosis; however, the high eosinophilia and of course the finding of schistosome eggs in the stool pointed to the parasitic cause for his disease. Treatment was instituted, although it was realized that the case was a late one and the prognosis extremely unfavorable, but the finding of live schistosome eggs indicated that even greater damage was possible. This additional damage could at least be eliminated by treatment that results in removing the cause of further liver trauma. The use of antimony and potassium tartrate in this case was fairly satisfactory, but the persistence of schistosome eggs and the unpleasant reaction, i. e., severe coughing, that followed its administration on several occasions made fuadin the next choice. The fuadin was administered intravenously without the slightest discomfort or reaction, and the treatment was apparently efficacious, and no schistosome eggs were subsequently found.

The second case in contrast to the first was luckily in a very early stage of parasitic invasion and there were no signs of liver involvement. This case illustrates the comparative ease with which the parasite is eliminated by specific treatment, and there is every reason to believe that this boy will remain egg free and will escape the fatal outcome that occurred in the first case.

Twenty-Sixth Street and First Avenue.

Clinical Notes, Suggestions and New Instruments

A METHOD FOR RESTORING THE BODY AFTER AUTOPSY

ELMUS D. PEASLEY, M.D.

Pathologist and Director of the Laboratory, the Truesdale Hospital
FALL RIVER, MASS.

In the course of modern medicine few things have contributed more materially to progress than postmortem examinations. They have provided physicians and surgeons with knowledge that could have been obtained in no other manner, by the layman, unfortunately, necropsy has been feared not favored. So important have been the results of such investigations that it is essential to make every effort to secure permission for an autopsy from relatives.

Gruesome ideas fostered by hearsay and regrettable pseudo-scientific publications have been largely responsible for the unwillingness of the public to grant authority to make postmortem examinations even when the benefits to be derived from them are well outlined by the attending physician. The undertaker has often been equally opposed to granting permission. As a mortician he makes it his business to protect his interests. He has objected to the condition of bodies when transferred to him by the pathologist which has been such as to make satisfactory preparation difficult.

The duty and responsibility of preparing the body for viewing by relatives and friends lie with the undertaker. Certainly his professional reputation rests squarely on the results that he is able to achieve. His clients are frequently in the depths of emotional despair; he must fulfil his obligation and restore the body to a semblance of its lifetime appearance.

Although it must be admitted that embalmers who thoroughly understand the principles as well as the technique of embalming, are able to prepare a body regardless of its condition on arriving at their table, many embalmers find themselves at a loss to restore a body properly when routine practices are made impossible by dissections at autopsy.

A well conducted postmortem examination in which the pathologist restores the body to the best of his ability, should be welcomed by the undertaker in preference to beginning work on a body that has not been so examined. The undertaker is justified in opposing autopsies when bodies are returned to him with important arteries carelessly severed or wantonly destroyed. There is no necessity for such lack of care.

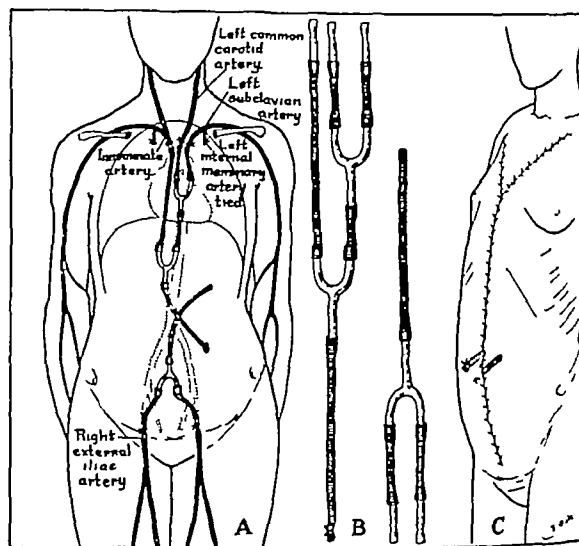


Diagram of glass and rubber tubing used by pathologist after autopsy in restoring body for undertaker.

Cooperation between pathologist and undertaker is necessary then if hospitals are to secure the desired permissions and if undertakers are to be able to restore bodies to the required standards after an autopsy has been performed.

In September 1933 this laboratory began experimenting with methods that would rid the undertaker of the greatest of post mortem cares, that of restoring the circulatory system. Methods of tying off arteries were unsatisfactory. There was always the chance of slipping or failure to tie a vessel. Contemporary with our efforts, Williams and Henderson¹ of the Taunton State Hospital began the use of glass cannulas in the aorta from which rubber tubes were passed to the surface through the stitching of the restored body. This method offered the embalmer a direct entrance to the arterial system and enabled him to complete his work in a shorter period of time and with a maximum of certainty of results.

Our experiments on the restoration of bodies after autopsy established a technique which has been highly satisfactory. For some time an attempt was made to preserve the arch of the aorta ligating it proximal and distal to the origins of the innominate, the left common carotid and the left subclavian arteries. By leaving this segment of the arch circulation to the head and both upper extremities could theoretically be established by embalming in the usual manner into either axillary artery. This procedure however is not practical because of the difficulty encountered in securing leak proof ligations of the aorta. There is the further disadvantage that the arch of the aorta cannot be examined a procedure which should not be omitted.

The first use of the present method was in October 1933. By dividing from the aorta separately the three great vessels to the upper extremities and head namely the innominate, the left common carotid and the left subclavian arteries and tying into each a glass cannula of the proper size it became possible by means of glass connecting U tubes and rubber tubing to establish access to these arteries by a single rubber tube extending through the incision of the restored body. The results

¹ Williams, H. W. and Henderson, D. C. Restoration of A Bodies. *New England J. Med.* 211: 371 (Aug. 23) 1934.

to the lower extremities, namely, the external iliac arteries, were similarly canalized.

In the accompanying illustration *B* shows the two sets of tubing and *A* shows the tubes in place. The glass cannulas are made in the laboratory from glass tubing of varying diameters. Scrap glass tubing furnishes most of the supply. Experience with the method is the best guide to the sizes of tubes required by the exigencies of the case at hand. After insertion into the respective arteries the cannulas are secured by tying them with heavy cotton string. Fine string or twine will invariably cut through the arterial wall. It is customary for the knowledge of the undertaker to tie a simple knot in the tube leading from the head. The internal mammary arteries are also tied.

Should it be necessary to cut the carotid arteries when the neck is examined these can readily be canalized and attached to the tube system by a longer segment of rubber tube, or another U tube can be inserted, thereby making the circulatory system intact again.

After postmortem examination there is relatively little blood left in the body. What remains, however, is allowed to drain into the body cavity by not ligating the veins. This material is easily taken care of by the undertaker's cavity fluid.

The results in the first case were all that could be desired and the undertaker in charge was enthusiastic in his praise of this newer method of restoration. Since October 1933 more than 100 bodies have been so restored. Opposition from the undertaker has been replaced by an agreeable cooperation.

The objection has been raised that this method is expensive and caters unnecessarily to the desires of the undertaker. The expense is approximately 50 cents a body, which does not seem an exorbitant price for the object achieved.

With the undertaker's honest objections to autopsies removed by this method, there still remains one of the greatest problems that of converting physicians to lead the way to obtaining permission for more postmortem examinations by example, that is, by granting permission for autopsies on their own relatives. Until this is accomplished, sincerity is lacking no matter how much the scientific value of autopsies is praised.

1820 Highland Avenue

THROMBOLYMPHANGITIS OF THORACIC DUCT CASE PRESENTING ABDOMINAL SYMPTOMS NECESSITATING EXPLORATORY LAPAROTOMY

S H POLAYES M.D. BROOKLYN

Thrombolympangitis of the thoracic duct is rare. The current literature contains but little information on this subject and the textbooks contain less. Pappenheimer¹ refers to a total of ten cases in the English, French and German literature up to 1921, adding two cases of his own. Von Glahn,² in a similar review in 1924, describes another case and calls attention to a case reported by Warthin³ and another by DeForest,⁴ both of which, the author states, were omitted from Pappenheimer's collection. The rarity of this condition is again emphasized by Kryloff⁵ and Wurm,⁶ each of whom reports an additional single case. This makes a total of eighteen cases, including the present case report.

The absence of clinical signs and symptoms pointing to the existence of a thrombolympangitis of the thoracic duct has been explained by the previous observers to be due to the deep course of the duct. All agree that it is most difficult to diagnose the condition clinically. That the disease may simulate closely an acute surgical condition in the abdomen has been illustrated in some of the previously reported cases as well as in the present case.

From the Department of Pathology, Cumberland Hospital.

- 1 Pappenheimer P. Ueber eitrige Entzündung des Ductus thoracicus. *Virchows Arch f path Anat* 231: 274 1921.
- 2 Von Glahn W C. General Streptococcus Sepsis Associated with Suppurative Inflammation of the Thoracic Duct. Report of Case. *Proc New York Path Soc*, 24: 87 1924.
- 3 Warthin in Osler William. *Modern Medicine*. Philadelphia Macrae Smith Company 4: 951 1928.
- 4 DeForest H P. Acute Suppurative Inflammation of the Thoracic Duct. A New Disease. Report of a Case. *New York State J Med* 7: 349 1907.
- 5 Kryloff, E. Zur Frage der eitrigen Entzündung des Ductus thoracicus. *Virchows Arch f path Anat* 226: 1 1927.
- 6 Wurm, H. Zur Kasuistik der Entzündungen des Ductus thoracicus. *Thrombolympangitis des Halsteils mit Halsvenenthrombose nach hamor rhagischen Lungeninfarkt*. *Centralbl f allg Path u path Anat* 39: 545 (May 15) 1927.

Regarding the etiology of this acute condition, nothing definite can be stated except that in three of the ten cases collected by Pappenheimer the streptococcus was isolated from the contents of the thoracic duct, which was true in Von Glahn's case and the case reported here. More than three fourths of the cases described occurred in men.

REPORT OF CASE

History—A D., a man, aged 55, a Puerto Rican, admitted to the Cumberland Hospital in the surgical service of Dr J E Jennings (to whom I am indebted for the clinical history), Nov 6, 1934, at 3 p m, complained of severe abdominal pain. He had been drinking the night before and at about 4 30 a m. the day of his admission he was suddenly seized with a sharp pain in the umbilical region. The pain, which was persistent, radiated to the rest of the abdomen and was accompanied by vomiting.

The past history revealed that for the last three months he had been having vague abdominal pains, which were relieved by solution of magnesium citrate. Several years previously he had had an attack of epididymitis and for the last few months he had been having a pink discharge from the urethra.

The family history was irrelevant.

Examination—The patient was acutely ill suffering from severe colicky pains in the abdomen. The vital signs were as follows: temperature 102 F, pulse 108, and respiration rate 22 per minute. The blood pressure on admission was 94 systolic, 72 diastolic.

Auscultation revealed heart sounds of poor quality and the presence of scattered moist rales over the right upper and left lower lobes of the lung posteriorly. There was also diminution of the breath sounds over these areas. The abdomen was distended and moderately rigid. The point of greatest tenderness was located in the epigastric region. Rebound tenderness and dullness in the flanks were both absent. Rectal examination failed to show any abnormalities.

Analysis of the urine showed an alkaline reaction, pink discoloration, the presence of numerous red blood cells and a trace of albumin.

The blood study showed the presence of 13,800 leukocytes per cubic millimeter, with 88 per cent polymorphonuclear cells and 12 per cent lymphocytes. A repeated study about twelve hours later showed a marked decline of the leukocytes to 5,850, with a rise in the proportion of the polymorphonuclear cells to 94 per cent.

The blood Wassermann test was reported negative on two occasions. The blood sugar was 120 mg and the urine 18 mg per hundred cubic centimeters. The blood diastase was 112.

The provisional diagnoses were (1) perforated gastric ulcer and (2) acute pancreatitis.

Clinical Course—Because of the severity of the abdominal symptoms it was decided to perform an exploratory laparotomy. General anesthesia was used. On exploration the only abnormalities discovered were marked congestion of the distal third of the ileum, the presence of old adhesions binding the omentum to loops of the small intestine in the right lower quadrant, and a cystic mass in the pelvis, considered by the operator to be dilated sigmoid.

The patient reacted fairly well but within twenty-four hours after operation his temperature steadily rose to 105 F, accompanied by a chill and increase in the signs of pulmonary consolidation. On the second postoperative day the temperature suddenly dropped to 99 F and then rapidly rose again to 105.5 F at which time the patient became cyanotic and comatose and died.

A definite postoperative diagnosis was not made. Influenzal pneumonia with complicating ileitis was considered to be the most probable diagnosis.

POSTMORTEM EXAMINATION

Only the important and pertinent manifestations are described.

General Description—The body was well developed but emaciated. The skin and mucous membranes were definitely cyanotic. The abdominal wall was the seat of a laparotomy wound from which turbid, red-brown fluid escaped as the sutures were removed.

Cavities—Peritoneal. The peritoneal cavity at the site of the incision was markedly congested. Only a small quantity

of serosanguineous exudate was present. The omentum was lightly adherent to the anterior abdominal wall.

Pleural Both cavities contained numerous old adhesions. The right contained in addition about 100 cc. of thin, purulent exudate, encysted at the level of the eighth rib in the mid-axillary line.

Cardiovascular System—The pathologic changes consisted essentially of congestion and cloudy swelling, usually associated with a severe toxemia.

Respiratory System—Bronchi The bronchi showed hyperemia and multiple, minute hemorrhages in the mucosa.

Lungs The lungs showed apical scars and caseous deposits of an old tuberculous process. Inter-alveolar fibrosis was found in the sections of all lobes. The left upper and lower lobes also showed conglomerated areas of consolidation (lobular pneumonia).

Gastro-Intestinal System—The esophagus and stomach were normal.

Intestine The first portion of the duodenum was the seat of a diverticulum about 3 cm in diameter and 5 cm in depth.

The proximal portion of the ileum showed no disturbance. The distal 20 cm of ileum was intensely congested and its wall markedly thickened. The mucosa, however, failed to show any gross changes other than congestion. Microscopically this portion of the ileum showed only a slight infiltration of polymorphonuclear cells involving all its layers. (This reaction might be attributed to surgical manipulation, since there was insufficient vascular response to suggest the presence of a true inflammatory ileitis.)

The mesentery at this site showed a similar degree of polymorphonuclear cell infiltration.

The appendix was bound to the brim of the pelvis by old adhesions and showed no gross or microscopic changes.

The spleen weighed 110 Gm and presented the usual appearance of toxic splenitis.

The pancreas weighed 90 Gm and showed no abnormalities.

Biliary System—The liver weighed 1,800 Gm and showed the usual cloudy swelling of a severe toxemia.

The gallbladder and bile ducts were normal.

Urinary System—The kidneys weighed approximately 110 Gm each and showed cloudy swelling, cortical cysts and very small areas of arteriosclerotic infarction.

The urinary bladder was dilated and its wall thickened by increase in fibrous tissue, congestion and edema.

The ureters were normal.

Endocrine System—The thyroid, adrenals and pituitary showed no pathologic changes.

Genital System—The penis, prostate and seminal vesicles were normal.

The right testis and epididymis were normal. The left testis and epididymis were each about one and a half times as large as those on the right and the diameter of the spermatic cord was about twice that of the right.

Sections through the left testis proper showed no gross or microscopic changes, but those of the epididymis presented numerous distended ducts, which were filled with amorphous, granular material. The rete testis was the seat of chronic inflammatory changes with replacement fibrosis and marked varicosities, many of the vessels showing marked perivascular round cell and plasma cell infiltration. Some of the blood vessels were hyalinized, others were occluded by organized thrombi and still others were the seat of marked, acute inflammatory infiltrate.

Sections removed from various levels of the spermatic cord as it proceeded to the inguinal canal showed the varicosities already described to be more marked, presenting a suppurative character to the thrombophlebitis. The process became diminished at the termination of the pampiniform plexus, leaving the rest of the spermatic veins only slightly involved.

The ductus deferens, although the seat of fibrous thickening of its wall showed no other pathologic condition.

Lymphatic System—The left lateral and pre-aortic lymph nodes were enlarged and soft and were the seat of purulent changes. A number of these nodes were reduced to mere capsules filled with frankly hemorrhagic and purulent exudate. Several of such nodes were connected with the cisterna chyli which was itself markedly distended by coagulated as well as fluid exudate of purulent character. From here on the entire thoracic duct, as far as could be traced, was filled with similar

exudate. At various levels along the duct, sacculations were found which markedly accentuated its usual varicose appearance. Its course in the posterior mediastinum between the aorta and the azygos veins was marked by brown discoloration of the lymph nodes and of the connective tissue of this region, both of which were found to be the seat of marked polymorphonuclear cell infiltration, edema and hemorrhagic extravasation. Its course through the superior mediastinum was marked by similar changes. Although the duct could not be traced to its termination into the subclavian veins, the portion of it that arched in the root of the neck was traced to a suppurative mass of fat and lymph nodes. Sections of the duct at various levels showed purulent infiltration of its wall and suppurative thrombosis, which in the sacculated areas completely occluded the lumen. The predominating elements of the thrombus consisted of disintegrated leukocytes, although here and there were also found clumps of bacteria and red cells.

Bacteriology—The direct smears of the contents of the thoracic duct and of the exudate from the lymph nodes showed a pure growth of long chains of streptococci. On culture of the contents of the thoracic duct these organisms were found to be *Streptococcus haemolyticus*.

The same organisms were found in the pleural mediastinal and peritoneal cavities, as well as in the exudate of the surgical wound of the abdominal wall.

Cultures and smears as well as guinea-pig tests were negative for tubercle bacilli. (The late Dr Charles Norris, chief medical examiner of New York City, who examined the specimen, was of the impression that the condition strongly suggested a tuberculous origin. At his suggestion the search for tubercle bacilli was repeated several times, each time yielding negative results.)

The anatomic diagnoses were as follows:

- 1 Chronic epididymitis
- 2 Suppurative thrombophlebitis of the pampiniform plexus
- 3 Acute suppurative lymphadenitis (lumbar, thoracic, mediastinal and cervical)
- 4 Suppurative thrombolympangitis of the thoracic duct.
- 5 Suppurative mediastinitis and pleuritis
- 6 Confluent lobular pneumonia and healed apical tuberculosis.
- 7 Laparotomy wound with local peritonitis
- 8 Cortical cysts of the kidney (arteriosclerotic)
- 9 Diverticulum of duodenum

COMMENT

The chain of events in this case may be stated as follows:

A dormant source of infection existed in the thrombophlebitis of the pampiniform plexus. This was complicated by a streptococcal infection (the respiratory tract being a possible portal of entry) and invasion of the organism into the adjacent lymphatics. This region being drained by the lumbar lymph nodes, the latter became purulent and the process extended to the cisterna. From there the suppurative thrombolympangitis ascended, causing a suppurative mediastinitis, which was fatal.

Kryloff's case was similar to the present case in many respects. The onset of the condition was acute and the patient presented symptoms referable to an inflammatory condition in the right lower quadrant, with localized tenderness in the ileocecal region. A clinical diagnosis of grip was made which was also true in this case, and autopsy revealed changes similar to those described here, i. e., acute tracheitis and bronchitis, purulent pleuritis, bronchopneumonia, and thrombolympangitis of the thoracic duct, with marked purulent lymphadenitis of the thoracic, abdominal and inguinal nodes. As in this case the course was very rapid, the condition terminating fatally within five days of the onset.

In Kryloff's case the organism was believed to have invaded the lymphatics from an area of cellulitis in the left leg, while in this case the original source could not be determined with certainty, the inflammation of the epididymis and the thrombophlebitis of the pampiniform plexus undoubtedly led to the involvement of the thoracic duct. According to Pappenheimer, death in these cases is due to peritonitis and septicemia rather than to the thrombolympangitis of the thoracic duct. In the present case, however, it is difficult to believe that so purulent a process and so marked an invasion of streptococci into the thoracic duct could be anything other than an important factor in the cause of death.

North Portland Avenue and Auburn Place

NEEDLE (ASPIRATION) BIOPSY

ROBERT P. BALL, M.D., CHATTANOOGA, TENN.

Director of Laboratories, Baroness Erlanger and Children's Hospitals

Needle aspiration has been a much used therapeutic and diagnostic procedure in general practice. The diagnostic possibilities are much greater when the macroscopic and bacteriologic examination of the aspirated material is extended to include sectioning and staining solid elements present. In the last few years various workers¹ have demonstrated the practical application of this method in obtaining tissue for biopsy. It has been used in every part of the body including the prostate², bone,³ lung,⁴ breast⁵ and vertebral column.⁶ Klinger and Burch⁷ have used aspiration biopsy to obtain specimens of the endometrium. Others have modified the needle so as to use a punch⁸ method.

The diagnosis of bone lesions is materially aided by the use of needle (aspiration) biopsy. The procedure is relatively painless and not expensive, and the patient will often permit the insertion of a needle when he would refuse an open incision. The osseous system is characterized by compactness and denseness. However, in pathologic conditions it loses its denseness and compactness so as readily to permit the insertion of a needle. Particularly is this true of localized destructive lesions due to inflammations or neoplasms.

Bone lesions are well demonstrated by roentgenography but in many cases there are not sufficient pathognomonic alterations to make a positive diagnosis. Since treatment and prognosis are dependent on the diagnosis, it is important to establish this with accuracy.

The following technic has proved satisfactory for obtaining biopsy material. It should be unnecessary to emphasize attention to every detail, for without doing so any technical procedure is liable to give unsatisfactory results.

TECHNIC

The skin is prepared with iodine and alcohol and anesthetized with procaine hydrochloride, and a number 18 needle is inserted into the lesion from which the material is to be obtained. A 50 or 100 cc. Luer syringe is then attached to the needle and the plunger withdrawn far enough to be grasped with the palm of the hand. The plunger is held steady in one hand and the barrel of the syringe with the needle attached is rotated from 90 to 120 degrees at the same time the needle being withdrawn or inserted a few millimeters. This maneuver should be repeated only until about 2 or 3 cc. of material is aspirated, which will usually contain blood. The needle is then withdrawn while traction is maintained on the plunger to hold the vacuum. On withdrawal, air rushing through the needle to close the vacuum in the syringe will clear it and the syringe tip of the tissue fragments. The plunger is then withdrawn care being taken not to force any material back into the syringe tip. Bacteriologic specimens or smears are taken at this time and the bits of tissue are teased from the blood clot and placed in a heap on a dry piece of paper. This is immediately dropped in 10 per cent solution of formaldehyde for fixation and then carried through dehydrating solutions cleared in xylene and embedded in paraffin for sectioning. Sections are stained with hematoxylin and eosin and mounted in balsam for permanent preservation.

927 East Third Street

Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

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- 2 Ferguson R. S. Prostatic Neoplasms. Their Diagnosis by Needle Puncture and Aspiration. *Am. J. Surg.* 9: 507 (Sept.) 1930.
- 3 Coley B. L., Sharp G. S. and Ellis E. B. Diagnosis of Bone Tumors by Aspiration. *Am. J. Surg.* 13: 215 (Aug.) 1931.
- 4 Sharo G. S. The Diagnosis of Primary Carcinoma of the Lung by Aspiration. *Am. J. Cancer* 15: 863 (April) 1931. Sappington S. W. and Favorite G. O. Lung Puncture in Lobar Pneumonia. *Am. J. M. Sc.* 191: 225 (Feb.) 1936.
- 5 Martin H. E. and Stewart F. W. The Advantages and Limitations of Aspiration Biopsy. *Am. J. Roentgenol.* 35: 245 (Feb.) 1936.
- 6 Ball R. P. Needle (Aspiration) Biopsy. *J. Tennessee M. A.* 27: 203 (June) 1934. Robertson R. C. and Ball R. P. Destructive Spine Lesions. Diagnosis by Needle Biopsy. *J. Bone & Joint Surg.* 17: 749 (July) 1935.
- 7 Klinger H. H. and Burch J. C. Suction in Obtaining Endometrial Biopsies. *J. A. M. A.* 99: 559 (Aug. 13) 1932.
- 8 Hoffman W. J. Punch Biopsy in Tumor Diagnosis. *Surg. Gynec. & Obst.* 56: 829 (April) 1933.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF HYPNOTICS

G. P. GRABFIELD, M.D.

BOSTON

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—Ed

The poet's dream of a harmless sleeping potion achieved reality through a lucky accident coupled with scientific vision when Liebreich¹ noted that animals went into an apparently normal sleep when given chloral hydrate and awoke without evident harm. Since that time, enormous industry and ingenuity have been expended to improve on this drug.² In no field of pharmacology has the relationship between physiologic action and chemical constitution been more assiduously studied. And yet, in some experiments done in 1930, chloral still stood at the head of the list of efficient hypnotics.³ Most of the recent work has concerned itself with the barbituric acid derivatives introduced into medicine by Fischer and von Mering⁴ in 1904. However, not all the work has been concerned with these, and in a recent review Hjort⁵ has outlined compounds of ten chemical groups possessing sufficient hypnotic effects to have merited the study of a large number of individuals. It is perhaps sufficient to say that the ideal hypnotic drug has not been found and that the realization of the accurate correlation between physiologic action and chemical constitution or physical properties cannot as yet be made in this group of drugs, even though the effect of certain groups in the molecule has been pretty well established.

The general action of the hypnotics is that of a descending depression of the central nervous system, beginning with the cortex. There is a large difference in the dose required to affect centers below the cortex as compared with that necessary to produce only cortical depression. However, individual compounds probably act at slightly different points in the cortex and some exhibit earlier subcortical effects than others. As doses are increased, the depression deepens and gradually the action on the deeper parts of the nervous system becomes more evident until one can see in the experimental animal and in the patient definite evidence of action on one of the vital centers in the medulla—usually the respiratory center. Of course, in addition to their action on the central nervous system most of these drugs have other effects. In some, the lethal effects are associated with their metabolism in the body. For example, chloral may kill by secondary degeneration of the liver or by its direct effect on the heart. The sulfone compounds, such as sulfonethylnmethane exert their effects on the liver and kidney, signaled by

- 1 Liebreich M. E. O. *Berl. klin. Wchnschr.* 92: 325 1869.
- 2 Lundy J. S. and Osterberg A. E. *Proc. Staff Meet. Mayo Clin.* 4: 386 (Dec. 18) 1929. Renner Albrecht. *Schlafmittel Therapie*. Berlin Julius Springer 1925.
- 3 Grabfield G. P. Observations on Efficiency of Commonly Used Hypnotics. *J. A. M. A.* 96: 1865 (May 30) 1931.
- 4 Fischer E. and von Mering J. *Therap. d. Gegenw.* 5: 97 1903.
- 5 Hjort Medical Papers dedicated to H. A. Christian. Baltimore Williams & Wilkins Company 1936 p. 903.

the hematuria which follows their use. This drug is also said to exert an effect on the purine metabolism, and some of the barbiturates are excreted in part as a uric acid complex. One wonders whether the purine metabolism may not be concerned with the central nervous system action of this group of drugs in some way, in view of Lennox's⁶ observation on the rise in blood uric acid in certain successful procedures in epilepsy, though he does not connect this observation with the success of the therapy.

The site of action on the cortex is probably within the cells themselves, as effects producing the changes accompanying sleep are evident long before any significant changes in pain perception can be demonstrated. Since these drugs act primarily at a point superior to the first synapse for painful stimuli within the central nervous system, it is to be expected that they could be prescribed with the analgesic drugs of the antipyretic series, which probably act in the thalamic regions where the pain stimuli arrive in the brain. Such has been found to be the case,⁷ interestingly enough, in both directions, that is, both the hypnotic effect and the analgesic effect are enhanced by the simultaneous exhibition of an analgesic and a soporific drug. It is interesting to note the variation in the effect of these drugs, the general pattern of whose action is essentially the same. Thus there is variation in absorption and excretion and in minor effects on various cortical or sub-cortical mechanisms, such as temperature, equilibrating sense and the special senses. Such actions may become apparent as idiosyncrasies of certain individuals to some of these drugs. Some act slowly after absorption, some rapidly, some act as chemical entities, whereas some are changed into active forms after absorption, some are excreted in the urine unchanged, some partly changed, and some are completely destroyed in the body. Any classification for therapeutic purposes cannot be made on the basis of such variable properties and must therefore be pragmatic in using as a basis the rapidity of onset and duration of sleep produced, with due consideration in choice of drugs to the frequency of the minor effects mentioned and the duration of action beyond actual sleep. On this basis the drugs to be discussed may be divided as follows: chloral, "Evipal," paraldehyde, carbromal (rapidly acting), sulfonethylmethane (slow acting), barbital, pentobarbital (among these) "Evipal," carbromal and paraldehyde (especially the first) act over a shorter period than pentobarbital, barbital, chloral and sulfonethylmethane (as to duration of action).

In addition to these, certain drugs must be considered which act primarily on the motor side of the nervous system though probably possessing some general sedative effects as well, namely, phenobarbital and the bromides. The former is an example of the variations in action that may be introduced by slight chemical changes in the molecule—the introduction of the phenol group apparently enhances the effect on the motor cortex to the point where the general sedative effects are partly masked. Before the foregoing general pharmacologic principles are applied it is necessary to consider sleeplessness in more detail.

The treatment of insomnia is a subject that can be considered from many angles. It seems wise to limit the discussion to certain phases of the subject in order to avoid excursions into the realm of psychiatry. Text

books of internal medicine do not recognize such a condition. Yet all know what is meant by the term, though from an etymological point of view it simply means lack of sleep from any cause. It may be due to pain, discomfort, dyspnea, frequency, diarrhea, itching or any symptom that forces itself on the sensorium. However, the usual idea of insomnia as a medical problem is that of sleeplessness unconnected with somatic symptoms. If sleeplessness is due to some definite cause such as one of those enumerated, treatment is necessarily directed to the relief of the underlying symptom. True insomnia, therefore, may be defined as sleeplessness due to no underlying stimulation preventing sleep or awakening the sufferer. The condition may assume different forms.

First, and most common, is difficulty in going to sleep, second, awakening early and inability to sleep again, third, periods of wakefulness in the middle of the night, and, finally, a reversal of the sleep mechanism with wakefulness at night and sleep by day. The cause of the first three types usually is habit or some emotional disturbance, either acute or as a manifestation of a psychoneurosis. The last, most distressing form is almost exclusively found in cerebral arteriosclerosis and usually is accompanied by other manifestations of senility.

Since it is axiomatic that the treatment of any symptom should be directed to its cause, and since the usual cause of insomnia is either habit or a psychoneurosis, it is obvious that treatment must be directed against these underlying conditions.

However, in connection with the foregoing, the indications for the use of hypnotic drugs may be concisely formulated. The following four indications for the use of soporific drugs seem clear: 1. When sleeplessness can be foreseen as the result of an acute situation of short duration. 2. When wakefulness is clearly due to an obvious cause, and the symptomatic relief will aid in the treatment. 3. When the cause is unclear but relief is urgently demanded, and no danger of masking night symptoms is present. 4. In the reversal of the sleep mechanism in cerebral arteriosclerosis.

The first group includes such situations as the near relatives of a deceased person before the funeral, the first night in the hospital, and others that will readily come to the reader's mind. In the second group are such cases as discomfort from any of the causes previously enumerated. Even though the cause is unclear and definite somatic symptoms are present, immediate relief of the third group of sufferers may aid subsequent therapy, especially if the cause is psychogenic. Finally, relief for the fourth group demands the utmost care in the use of drugs to change the mechanism without intensifying it by the late action of the soporific.

To connect these two classifications will provide the appropriate therapy.

Considering first those with rapid action over a comparatively short period of time suitable for patients unable to get to sleep, one finds first of all paraldehyde and chloral, both of which have stood the test of time. The obvious disadvantage of paraldehyde lies in its odor on the breath the following day, but this is often more than compensated by its efficacy and above all by the practical absence of toxicity. It must be remembered, however, that the combined use of morphine and paraldehyde is highly toxic. Chloral is undoubtedly the most useful of all the hypnotics and the cheapest. Given well diluted in water it produces sleep within an hour, and in proper doses (from 0.3 to 0.6 Gr.)

⁶ Lennox, W. G. and O'Connor, Marie. *J. Biol. Chem.* **66**: 521 (Dec.) 1925.
⁷ Reitz, E. *Arch. f. exper. Path. u. Pharmacol.* **161**: 379, 1931.

5 to 10 grains) is entirely harmless even in heart disease. There is no doubt that in toxic doses it kills by its effect on the heart, but the fear of this side action has been engendered by the large dosage that has always been recommended up to the last few years. None the less, it is not the hypnotic of choice in heart disease, though it may be used if for some reason the barbitals and paraldehyde are contraindicated in a given patient. For quick action of short duration, two of the barbiturate series recommend themselves. Pentobarbital (from 60 to 120 mg, or 1 to 2 grains) has proved very useful.

Barbital itself is still probably the most satisfactory drug when more prolonged and less prompt action is desired. In all these drugs both intensity and duration of action are increased with increasing doses. If, therefore, more than 0.6 Gm (10 grains) of barbital is found necessary to produce the effect desired, another drug should be used. Comparable to barbital, but of another chemical constitution, is "Sabromin," considerably more expensive than barbital, carbromal also may be tried. Sulfonethylmethane has fallen into disuse on account of the long period before it acts and because of its prolonged stay in the body. However, these very qualities can be utilized in selected cases. It is usually effective from five to seven hours after administration and is particularly useful in the second group of patients. Its action, however, is prolonged and it may leave a certain amount of drowsiness the next day. Furthermore, repetition over a comparatively short period, even in ordinary doses, is said to lead to liver damage. In occasional selected cases for short periods it may be extremely useful, especially in supplementing the action of some of the shorter acting drugs. Thus the combination of barbital with sulfonethylmethane given an hour or two before bedtime may prove more satisfactory than double the dose of barbital for producing a deep sleep throughout the night. This evidence of synergism suggests that other combinations might prove equally useful. The unfortunate one between paraldehyde and morphine has been mentioned and another between chloral and alcohol is well known, even to the underworld, in the form of "knock-out drops." "Synergism" between the hypnotics and antipyretics (analgesics) has been fairly well studied in some instances. This should be utilized when pain or discomfort is associated with insomnia. While the antipyretic drugs of the types acetylsalicylic acid, aminopyrine and acetophenetidin have almost no hypnotic actions, the soporifics discussed have equally little effect on pain. Yet combinations of these two groups of drugs enhance the effects of each. In this connection it is well to remember that both morphine and codeine are inefficient hypnotics as compared with the drugs discussed. Finally, on certain occasions sleep is disturbed, largely by motor restlessness, "the fidgets," not directly associated with cerebral activity. Under such circumstances, phenobarbital ("lunual") and the bromides are most useful, but their effects are prolonged on a comparatively low level of intensity. Both are poor hypnotics in the strict sense of the term and produce their quieting effect by their depression of the motor side of the central nervous system, neither should be used as a simple soporific. It seems hardly necessary to caution against the use of morphine when pain is not a factor, and, while scopolamine alone or with morphine may be useful in states of great motor excitement, it should not be considered as an ordinary hypnotic.

It should be understood that the foregoing remarks apply primarily to the use of these drugs for simulating normal sleep. The problem of preanesthetic medication is an entirely different one. The purpose here is to find a drug that will relieve the apprehensive attitude of the patient, have no untoward effect in combination with the anesthetic about to be used, and produce partial anesthesia, to be completed by a lesser amount of inhalation anesthetic. It is noteworthy that historically the drugs that have been suggested for preanesthetic medication were originally introduced as anesthetics. They have all the objections of any fixed anesthetic. Many accidents have occurred, particularly with tribromethanol. Some drugs so introduced have come subsequently to be recommended as hypnotics, but most present no advantages over those in common use.

Apparently for preanesthetic medication and for a partial anesthetic in obstetrics,⁸ pentobarbital sodium has proved to be most satisfactory in that it is quick acting and fits well with all the inhalation anesthetics.

Since the use of soporifics for this purpose has become common, a tendency has arisen of giving them as hypnotics in larger doses than is warranted for simple sedation. This has led to the use of drugs that are actually not very efficient in doses that are sufficiently large to produce some of the untoward toxic symptoms, such as delirium and ataxia. It should be repeated that in doses which produce simulation of normal sleep the group of drugs that is being discussed has little, if any, pain relieving qualities. This fact is to be emphasized, since too often the physician exhibits large doses of hypnotics when the use of one of the analgesic drugs would be more efficient in producing sleep. When sleeplessness is due to pain or discomfort, one of the analgesic drugs, such as acetylsalicylic acid, acetophenetidin or aminopyrine, should be used either alone or in combination with hypnotics. The drugs of these two groups have been shown to have a synergism with each other and skilful mixtures of barbital or chloral with one of this group are frequently surprisingly efficient, even in pain as severe as that of spinal metastases.

This leads to the consideration of the opium group, which should not be exhibited except for certain very definite indications, owing primarily to their habit forming qualities.⁹ Morphine itself, though hypnotic, is more efficient in the relief of pain, whereas codeine is not very efficient for the relief of pain or for the production of sleep, its particular field being in the depression of the cough center. As to habit formation, of course, this is primarily a property of morphine, but, unfortunately, the newer derivatives of morphine appear to offer no improvement in this respect. Codeine apparently does not furnish sufficient euphoria to be habit forming. It is probable that the continued use of any of these drugs produces certain tolerance, but from a practical point of view this is not significant and habit formation from the hypnotics is psychic rather than otherwise.

A discussion of sleep producing agents would not be complete without the mention of their use with suicidal intent. The readiness with which these drugs can be purchased by the public makes them ideal agents. Fortunately the lethal doses are larger than the layman thinks, so that the attempts are often unsuccessful. It should not be forgotten that occasionally delirium is a symptom of poisoning with these agents, especially

⁸ Irving F C Berman S and Nelson H B Surg Gynec & Obst 58 1 (Jan) 1934
⁹ Gunn I A Physiol Rev 3 41 (Jan) 1923

with the bromides¹⁰ Many treatments have been advised for patients under the influence of these narcotics. Analeptics of all sorts have been used both logically and illogically.¹¹ The use of strychnine is not desirable because its action is primarily on the spinal cord,¹² and while these drugs can control the convulsions from strychnine poisoning from above, the converse obviously cannot hold true. "Coramine"¹³ has been tried with favorable results. However, the most striking results have been obtained by the use of picrotoxin,¹⁴ owing to the stimulating effect of this drug on the vital centers of the medulla in keeping the patient alive until the toxic drug can be removed from the body. However, the difficulty lies in having the picrotoxin when it is needed and in the fact that picrotoxin is a dangerous drug.¹⁵ In addition, the fluid intake must be high and introduced by all routes, as a percentage of many of the drugs is excreted through the kidneys. Diuretics may also prove of value.¹⁶ Care should be taken to prevent chilling of the patient. Nutrient enemas or even feeding by nasal tube may be necessary if stupor is prolonged.

In exhibiting the hypnotics, the physician does well to follow the fundamental principle of sound therapeutics, which is to learn thoroughly all the possibilities of a few drugs before adding to his armamentarium many substances hastily introduced and inadequately tested.

319 Longwood Avenue

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH, Secretary

GADOMENT NOT ACCEPTABLE FOR N N R.

Gadoment is the coined, proprietary name under which E. L. Patch & Co markets a preparation stated in the firm's house organ, *Patchwork*, to contain "70% Cod Liver Oil in a wax base with Zinc Oxide Benzoin and Phenol." According to a trade package it is proposed for use in the treatment of burns, cuts and minor skin irritations. The composition is not declared on the trade package.

Early in 1935, E. L. Patch and Co. inquired of the Council's Secretary what would be the attitude of the Council on the use of the trademarked name "Gadoment." The firm did not at that time present the product for the Council's consideration, nor has Gadoment since been presented. The Council's secretary asked the firm on what premises it would base the claim for the use of a proprietary name.

Some further correspondence was carried on between the firm and the Secretary concerning the name "Gadoment," the firm stating that the name does not suggest diseases, pathologic conditions or therapeutic indications and that it simply indicates to physicians the potent ingredients. The firm also stated that Gadoment is the first of this class of preparations and therefore

is entitled to a special name. In the end the Council held the firm's right to the use of a proprietary name for this product was not established.

In a later communication the firm stated that it was gathering data on this preparation. The Secretary explained to the firm that a product should not be submitted to the medical profession for use until evidence for such use had been established and that it would not be keeping faith with the profession if, on the one hand, the product was advertised to the profession for certain indications, and on the other hand the Council was informed that the firm did not have sufficient evidence.

As long ago as November and December 1934 in the firm's house organ sent to physicians and dentists *Patchwork* (Vol. 1, No. 6, p. 4), there was an entire page devoted to cod liver oil in the treatment of skin diseases and an advertisement for the new cod liver oil treatment for burns and other skin injuries, "Gadoment-Patch."

Further, in *Patchwork* (Vol. 18, No. 6, p. 2, 1935) there is comment on Gadoment entitled "Gadoment Clinical Studies and illustrations of varicose ulcer of six years duration with the same case discharged after ten weeks' treatment. Mentions is also made of "descriptive literature" on Gadoment. This has not been submitted for the Council's consideration.

The firm offered no further argument but apparently proceeded with the marketing of the product with the label claims already pointed out.

From its consideration of the evidence from the literature the Council concluded that the whole subject of cod liver oil treatment of burns and wounds is still in an experimental stage. Lauber finds that vitamin A produces no acceleration in the process of wound healing, and in the case of concentrated application he even noted a slight retardation. He noted that vitamins B₁ and C produced slight retardation in wound healing when given in comparatively large doses and that vitamin D produced a slight acceleration when administered in low concentration, but in moderate doses it had no effect on the healing of wounds, and in concentrated doses it even retards healing. Löhr found that addition of petrolatum reduces the bactericidal power of cod liver oil and calls for careful examination as regards sterility. Moreover, Lauber apparently disagrees with the observations of Löhr in regard to the value of these local applications of cod liver oil, and he even states that acceleration of the healing process is never as convincing as following oral administration in small doses of vitamin A, and that oral administration of vitamin D had no effect whatever on the wound healing process. Lauber also deplores lack of definite statements regarding the vitamin contents of vitamin ointments in the treatment of wounds and considers it inadvisable to use ointment with various components.

The package cover for Gadoment indicates to the user its purpose for treatment of certain diseases. This is in conflict with the Council's rules concerning indirect advertising of products. It also states that "A special base which physicians have found most desirable as a dressing for skin injuries is used. This is in conflict with the Council's rule providing for unambiguous declaration of composition of a product."

The Council desires to emphasize the fact that E. L. Patch & Co., which has for years had relations with the Council and should thus be conversant with proper procedure, has in the case of Gadoment gone precisely contrary to the accepted practice of introducing a new preparation. Instead of collecting evidence for claims and then presenting this to the Council, the firm went ahead promoting the product with the unconfirmed claims. The Council therefore found it necessary to consider the preparation on its own initiative and to inform the medical profession concerning it and the claims made for it.

The Council declared Gadoment unacceptable for Nonofficial Remedies because it is an unoriginal preparation insufficiently declared composition marketed under a coined proprietary name with unwarranted therapeutic claims and indirectly advertised to the public.

- 10 Diethelm Oskar J Nerv & Ment. Dis 71 151 (Feb) 1930
- 11 Barlow O W J Pharmacol & Exper Therap 55:1 (Sept) 1935
- 12 de Barenne J G D Physiol. Rev 13 325 (July) 1933
- 13 Schube P G New England J Med. 214 926 (May 7) 1936
- 14 Maloney A H Fitch R H and Tatum A L J Pharmacol & Exper Therap 41 465 (April) 1931
- 15 Status of Picrotoxin, Report of Council on Pharmacy and Chemistry J A M A 107:354 (Aug 1) 1936
- 16 Gower W E., and Tatum A L. J Pharmacol & Exper Therap 37 481 (Dec) 1929

PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Those engaged in teaching, research and other activities are admitted, as well as those in active practice. For the list of pathologists in government service, see page 1389.

LIST OF PATHOLOGISTS

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
ALABAMA				CONNECTICUT			
Birmingham		Pasadena		Danbury			
Graham Geo S	1023 S 20th St	Food Alvin G	Huntington Memorial Hosp	McIlroy P T			95 Locust Ave
Fairfield		Sturdivant B Frank	St Lukes Hospital	Hartford			
Jones Walter C		Pomona		Allen Wilmar M			20 S Hudson St
Tennessee Coal Iron and Railroad Hospital		Casse Lucius W	1798 N Carey St	Hastings Louis P			370 Collins St
Montgomery		Redlands		Kendall Ralph E			20 S Hudson St
Trumper Abraham	201 Montgomery St	Taltavall Wm A	47 E Vine St	Middletown			
ARIZONA				Beauchemin Joseph A	Connecticut State Hosp		
Phoenix		Sacramento		Fisher Jessie W	Middlesex Hospital		
Hartgraves Thos A	10th St and McDowell Rd	Christman Paul Wm	1027 10th St	New Haven			
Mills H P	15 E Monroe St	Guttmann Paul H	1127 11th St	Bartlett Chas J..			Grace Hospital
Tucson		Johnson Barton W		Norwalk			
Hicks Robert Alan	1800 E Speedway		Sacramento County Hospital	Murray Archibald			Norwalk General Hospital
Langdon Harry K.	2717 E 4th St						
ARKANSAS				Stamford			
Hot Springs		San Diego		Weaver Bruce S			77 South St
Lee Dee C	236 Central Ave	Ball Howard A	San Diego Co Gen Hosp	Waterbury			
Little Rock		Elliott Frances P	1028 32d St	Collins Joseph O			64 Robbins St
Hoge S F	215 E 6th St	Pickard Rawson J	320 E St				
Thatcher Harry S		Sumerlin Harold S	2001 4th Ave				
University of Arkansas School of Medicine		Thompson Harold A.	233 A St.				
Pine Bluff						DELAWARE	
Pittman Wm G	202 Pine St	San Francisco		Wilmington			
CALIFORNIA				Cay Douglas M			Homeopathic Hospital
Berkely		Bolin Zera E	490 Post St.	Hemsath Fredk. A			14th and Washington Sts
Reich Wm. W	2236 E Durant Ave	Carr Jesse L	51 San Andreas Way				
Glendale		Lippman Marlon H	135 Stockton St	DISTRICT OF COLUMBIA			
Kimball Theodore S	102 N Brand Blvd	McNaught James B		Washington			
Hollywood		Stanford University School of Medicine		Cajigas Tomas			1801 Eye St N W
Andrews Vernon L	1322 N Vermont Ave	Oliver Harry R	490 Post St	Cholsser Roger Morrison			1335 H St N W
Loma Linda		Perry Isabella Hester	Univ of Calif Med Sch	Dardinski Vincent J			
Cutter O J		Smith Elmer W	2200 Hayes St				Georgetown Univ School of Medicine
Dale Charles J	College of Medical Evangelists	Smith Pearl M.	3700 California St.	Kelly Robert A.			1150 Connecticut Ave N W
				Langenstrass K. H			St Elizabeths Hospital
Long Beach		Stowe W Parker	St Luke's Hospital	Lindsay Janvier W			1726 Eye St. N W
Mikels Benjamin M.	Seaside Hospital	Wood David A	2398 Sacramento St	Neuman Lester			1835 Eye St N W
Shackford B C	117 E 8th St	Wyckoff Harry A	Stanford Univ Hosp	Rice E Clarence			1726 Eye St N W
				Selinger Maurice A.			1726 Eye St N W
Los Angeles		San Jose		FLORIDA			
Bettlin Mona E	727 W 7th St	Campbell Lenore D	306 S 16th St.	Jacksonville			
Bonyngue Chas W	1930 Wilshire Blvd	Santa Ana		Dyrenforth L. Y			1022 Park St
Brem Walter V	657 S Westlake Ave	Martell B S	115 Owens Dr	Kirk Wm W			208 Laura St
Butt Edward M	1300 Wilshire Blvd	Santa Monica		Royce Clayton E			1022 Park St
Evans Newton	1200 N State St	Kosky Alfred A.	1250 16th St	Miami			
Hall Ernest M	3551 University Ave	McLean Wm J	938 24th St.	Youmans Ira C			653 S W 2d St
Hammack Roy W	657 S Westlake Ave	Stockton		Tampa			
Henken Louisa	3551 University Ave	Holliger Chas D	242 N Sutter St	Mills Herbert R			700 Franklin St
Hill Robt B	511 S Bonnie Brae	COLORADO					
Hyland Clarence M	4614 Sunset Blvd	Colorado Springs		West Palm Beach			
Lindberg Ludwig	1407 S Hope St	Ryder Charles T	1626 Wood Ave	Johnson V M			Good Samaritan Hospital
Maner Geo D	657 S Westlake Ave	Staines M Ethelyn	23 E Pikes Peak Ave				
Pratt Orlyn B	312 N Boyle Ave	Denver		GEORGIA			
Setzler Geo B	1052 W 6th St	Black William C	4200 E 9th Ave	Atlanta			
Zeller A H	657 S Westlake Ave	Carson Paul C	Presbyterian Hospital	Ayers A J			384 Peachtree St
Oakland		Dobos E I	1818 Humboldt St.	Blahop Everett L			384 Peachtree St
Glenn Robt A		Freshman A. W	227 16th St	Klugh Geo F			139 Forrest Ave N E
Michael Paul		Hillkowitz Phillip	227 16th St	Leadingham R S			110 Medical Arts Bldg
Moore Gertrude		Jones Rodney H	227 16th St	Matthews Warren B			Grady Hospital
Olive View		Kingry Charles B	1616 Tremont Pl	Norris Jack C			810 Doctors Bldg
Boegen Emil		Mugrage Edward R	4200 E 9th Ave	Augusta			
				Pund Edgar R			Univ of Ga Sch of Med
				Emory University			

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
ILLINOIS					
Bloomington		Davenport		Bradford	
Markowitz Benj	219 N Main St	Lamb Frederick H	220 Main St	Bartlett Bernice A	11 Haschitz
Chicago		Des Moines		Brookline	
Appelbach Carl W	1753 W Congress St	Weingart Julius S	406 6th Ave	Dalrymple S C	233 Walc
Arkin Aaron	55 E Washington St	Dubuque		Fall River	
Benjamin Eustace L	185 N Wabash Ave	McNamara Frank P	1596 Delhi St	Leasley Elmus D	1890 Highland Ave
Brown Seth E	533 Grant Pl	Iowa City		Walsh James H	538 Prospect
Croy C Churchill	25 E Washington St	Herrmann Walter W	University of Iowa	Lowell	
Davidsohn Israel	2750 W 15th Pl	Smith Harry P	132 Medical Laboratory Bldg	Rodger James Y	226 Central
Delaney P Arthur	8114 Euclid Ave	Thatcher W C	University of Iowa	New Bedford	
Dwyer Thomas L	232 W 63d St	Warner Emory D	124 Medical Laboratory Bldg	Wason Isabel Mary	101 Pa
Fishback Hamilton R	303 E Chicago Ave	Mason City		Pittsfield	
Cardner Stella M	30 N Michigan Ave	Morgan Harold W	St Joseph's Mercy Hosp	Criscliffello Modestino	8 Bank Ex
Hennemeyer R J	1305 E 63d St	New Hampton		Scoville Helen M	41 North
Hirsch Edwin F	1439 S Michigan Ave	Haumeder M Eva		Springfield	
Hospers Cornelius A	Englewood Hosp	Ottumwa		Dwyer John E	146 Chestnut
Howell Katharine M	29th and Ellis Ave	Hecker Friedrich A	130 E Maple Ave	Jones Fred D	40 Maple
Jaffe Richard H	533 Grant Pl	Sioux City		Westboro	
Kearns Jerry Joseph	4438 Madison St	Starry Allen C	St Joseph's Mercy Hosp	Pierce Lydia Baker	Westboro State Hosp
Kirschbaum Jack D	7845 S Essex Ave	Kansas City		Worcester	
Kremer Rudolph J	333 Belden Ave	Wahl Harry R	Univ of Kansas Hospitals	Elliott William J	119 Belmont St
Lerine Victor	6000 S Albany Ave	Salina		Freeman William	P O Box 47
Levinson Samuel A	1817 W Polk St	Moses Howard N	100 S Santa Fe St	Goodale Raymond H	Worcester City H
Lewis Julian H	4750 Champlain St	Topeka		Looney Joseph M	Worcester State Hosp
Lincoln Mary C	30 N Michigan Ave	Lattimore John L	901 Kansas Ave	Moran William G	73 Vernon St
Matthies Mabel M	83 N Wabash Ave	Wichita		MICHIGAN	
Moore Josiah J	55 E Washington St	Hellwig C Alexander	St Francis Hospital	Ann Arbor	
Murphy Leonard J	4753 Broadway	Jones Maurice L	Wichita Hospital	Bugher John C	Dept of Path Univ of Mich
Murphy Lyman C	55 E Washington St	KENTUCKY		Howard S C	326 N Ingalls
Nelman Benj H	53 E Washington St	Lexington		Wanstrom Ruth C	Dept of Path Univ of Mich
Nicoll Homer K	122 S Michigan Ave	Maxwell Elmer S	190 N Upper St	Weller C V	Dept of Path Univ of Mich
Petersen A S J	45 67 W 11th St	Louisville		Battle Creek	
Petersen Wm F	1853 W Polk St	Allen John D	608 S 4th St	Humphrey Arthur A	Lella Y Post Montgomery Hospital
Pilot Inadore	185 N Wabash Ave	Gordon Harold	Univ of Louisville	Lewis Welcome B	Battle Creek Sanitarium
Pribram Ernest	4458 Malden St	Miller Aura J	323 E Chestnut St	Roth Paul	Battle Creek Sanitarium
Ragins Alex B	Cook County Hospital	Weeter Harry M	332 W Broadway	Bay City	
Rosenthal Sol Roy	1853 W Polk St	Pewee Valley		Gamble Wm G Jr	4010 10th Ave
Rukstnat George J	1758 W Harrison St	Peters John R	Pewee Valley Sanit & Hosp	Detroit	
Saphir Otto	29th and Ellis Ave	LOUISIANA		Amolsch Arthur L	Wayne Univ Coll of Med
Simonds James P	303 E Chicago Ave	Baton Rouge		Beaver Donald C	Woman's Hospital
Swan Mary H	55 E Washington St	Bevern John L	Our Lady of the Lake Sanitarium	Brines Osborne A	Receiving Hospital
Sweeney Henry C	5601 N Pulaski Rd	Lake Charles		Clark Harry L	3037 Woodward Ave
Welss Emil	Univ of Ill Coll of Med	Hebert Louis A	834 Ryan St	Cope Henry E	1631 Woodward Ave
Wells H Gideon	Dept of Path Univ of Chicago	Monroe		Davis James E	1512 St Antoine St
		Pracher John	301 Jackson St	Hartman Frank W	Henry Ford Hosp
Decatur		New Orleans		Kasper Jos A	1151 Taylor Ave
Melnick Perry J	Decatur and Macon County Hospital	Bowden Margaret P H	210 Baronne St	Morse Plinn F	Harper Hospital
Evanston		Couret Maurice J	2000 Tulane Ave	Owen Clarence J	4160 John R St
Gunn Francis D	2650 Ridge Ave	Friedrichs Andrew V	921 Canal St	Owen R G	1001 Woodward Ave
Schultz Oscar T	335 Ridge Ave	Hausser George H	927 Canal St	Stafford Frank W	1111 Griswold St
Joliet		Lanford John A	3500 Prytanis St	Eloise	
Wilson W Henry	204 Scott St	Lawson Edwin H	2700 Napoleon Ave	Could S E	Eloise Hospital and Infirmary
Moline		Maher Aldea	1110 American Bank Bldg	Finlet	
Vollmer Maud J	1630 Fifth Ave	Ogden M A	2226 Ursuline Ave	Backus Glenn R	901 Berol
Oak Park		Shreveport		Grand Rapids	
Hill Lewis R	1011 Lake St	Butler Willis P	941 Margaret St	Bond Geo L	114 Fulton St E
Plette Eugene C	518 N Austin Blvd	Ellis Fredk G	624 Travis St	German Wm M	Blodgett Memorial Hospital
Peoria		MAINE		Grosse Pointe	
Bohrod Milton G	124 Randolph St	Bangor		Gruhlitz Oswald M	580 Hampton Rd
Quincy		Thompson H. E	250 State St	Kalamazoo	
Cohen Frank	529 Hampshire St	Lewiston		Prentice Hazel R	3404 Oakland Dr
Rockford		Belliveau Romeo A	St Mary's General Hosp	Pontiac	
Palmer Harold D	507 Chestnut St	Gottlieb Julius	40 Central Ave	Olsen Richard E	33 W Huron St
Springfield		Portland		Saginaw	
Light Frederick W	St John's Hospital	Warren Mortimer	22 Arsenal St	Lohr Oliver W	401 James Ave
INDIANA		MARYLAND		MINNESOTA	
Bluffton		Baltimore		Duluth	
Nickel Allen A C	Caylor Nickel Clinic	Acton Conrad	101 W Read St	Berdez George Louis	St Mary's Hospital
Evansville		Collenberg Henry T	2 W Read St	Wells Arthur H	St Luke's Hospital
McGlumphy Chas B	614 Mary St	Glechner Manuel G	2426 Eutaw Pl	Minneapolis	
Seltz Chas L	412 S E 4th St	Maldels Howard J	104 W Madison St	Baker Loe	1111 Nicollet Ave
Fort Wayne		Spencer Hugh R	University of Maryland	Drake Charles R	900 Nicollet Ave
Rhany Bonnelle W	347 W Berry St	MASSACHUSETTS		Crave Floyd	873 Nicollet Ave
Indianapolis		Boston		Luffkin Nathaniel H	424 W Diamond Lake Rd
Banks Horace M	1604 N Capitol Ave	Belding David L	80 E Concord St	Verkert Geo L	1412 F 4th
Forry Frank	Indiana Univ Hospitals	Branch Chas F	80 E Concord St	Smith Margaret I	267 Chicago Ave
Thornton Harold C	Indianapolis City Hospital	Burnett Francis L	205 Beacon St	Rochester	
Kokomo		Dunbar Frank H	43 Bay State Rd	Broders A C	Mayo Cl
Long Alfred G	St Joseph Memorial Hosp	Fienberg Robert	3 Copeland St	Kernohan J W	Mayo Cl
Lafayette		Flashman David H	37 Schuyler St	MacCarty Wm C	Mayo Cl
Hunter Frank P	300 Main St	Gates Olive	Massachusetts General Hospital	Magath Thos B	Mayo Cl
Muncie		Collis P Huntington	Memorial Hospital	Robertson H E	Mayo Cl
Cole Russell E	203 Western Reserve Bldg	Hinton Wm A	25 Bennet St	Rosenow E C	Mayo Cl
South Bend		Hooker Sanford B	80 E Concord St	Sanford Arthur H	Mayo Cl
Clordano Alfred S	531 N Main St	Leary Olga Cushing	43 Bay State Rd	Wellbrook Wm L A	Mayo Cl
Lyon Marcus W Jr	122 N Lafayette Blvd	Leary Timothy	43 Bay State Rd	Wilson Louis B	Mayo Cl
Terre Haute		Mallory Tracy B	Massachusetts General Hospital	St. Cloud	
Selsam Etta Barkdoll	401 Rose Dispensary Bldg	Oslin J Edwin	30 Huntington Ave	Stanzi Fred H	101 St. Ave
Williams B C R	St Anthony's Hospital	Raskin Naomi	Boston State Hospital	St Paul	
IOWA		Rooney James Stewart	53 Parker Hill Ave	Ikeda Kano	125 W College
Cedar Rapids		Schlesinger Monroe J	330 Brookline Ave	Noble John Franklin	Snicker H
Mulrow Fredk W	120 3d Ave SE	Steele Albert F	23 Bay State Rd	MISSISSIPPI	
Cherokee		Ulrich Helmut	70 Huntington Ave	Greenville	
Pope John M		Warren Shields	19 Pilgrim Rd	White F T	301 1/2 W Main
Clinton					
Boyer Edward E. H	114 32d Ave				

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
Vicksburg Lippincott Leon S	920 Crawford St	Trenton Boughton T Harris Rogers Wm N	440 Bellevue Ave 1235 Brunswick Ave	Newburgh Wescott A M	231 Liberty St
MISSOURI		West Orange Goldberg Samuel A	169 Gregory Ave	New Rochelle Brooks Henry T	35 Woodland Ave
Columbia Neal M Pinson	Dept of Path Univ of Mo	NEW MEXICO		New York Aronoff Rosa	Metropolitan Hospital 150 E 182d St
Jefferson City Adams C F	Mo State Board of Health	Albuquerque Beam M P	221 W Central Ave	Aronson Wm	2280 Andrews Ave
Kansas City		NEW YORK		Block Nathan	150 W 87th St
Duncan Ralph Emerson	306 E 12th St	Albany		Brown Chester R	205 E 68th St
Hall Frank J	306 E 12th St	Clemmer John J	130 S Lake Ave	Cocheu Lindsley F	208 E 23d St
Helwig Ferdinand C	St Luke's Hospital	Gilbert Ruth	116 N Allen St	Darlington Charles G	131 W 110th St
Johnson Emsley T	St Joseph Hospital	Hornor Henrietta Calhoun	171 S Main Ave	Dolgopol Vera B	150 E 57th St
Kerr Russell W	Kansas City General Hosp	Klinck Gustavus H Jr	Albany Med Coll	Eggston Andrew A	653 Park Ave
Kortschoner Robt	4949 Rockhill Rd	Steen Harry M	136 S Lake Ave	Ehrlich Joseph C	Lebanon Hospital 625 E 68th St
Larr Frederick C	Research Hospital	Wright A W	Albany Med Coll	Elker Wm J	2 W 106th St
Stewart Edward L	1115 Grand Ave	Auburn		Ewing James	667 Madison Ave
Trimble Wm K	1103 Grand Ave	Adams George B	141 Genesee St	Felsen Joseph	711 E 230th St
St Louis		Batavia		Ferraro Louis R	525 E 68th St
Allen Hollis N	634 N Grand Blvd	Smith Wm Adams	31 Thomas Ave	Foot Nathan Chandler	153 W 11th St
Bushman Rudolph	539 N Grand Blvd	Binghamton		Fraser Alexander	1882 Grand Concourse
Fleisher Moyer S	1402 S Grand Blvd	Bergstrom V W	Binghamton City Hosp	Frosch Herman L	25 Central Park West
Gradwohl R B H	3514 Lucas Ave	Gregory Hugh S	Binghamton State Hosp	Geiger Jacob	1 100th St
Gray Samuel H	Jewish Hospital	Brooklyn		Gerber Isaac E	160 Riverside Dr
Harris D L	508 N Grand Blvd	Baker Margaret A	437 Orvington Ave	Gonzales Thomas A	477 First Ave
Ives Geo	3720 Washington Blvd	Black F A	80 Hanson Pl	Graef Irving	226 W 71st St
Katz Samuel D	3720 Washington Blvd	Comeau Berthold R	Kings County Hosp	Crauer Frank	6 E 78th St
Klenk Chas L	508 N Grand Blvd	Curphey Theodore J	480 Herkimer St	Hadjopoulos L C	38 E 90th St
McCordock Howard A	Washington Univ	Derby Irving Marsh	681 Clarkson Ave	Heltzmann Louis	1301 Madison Ave
Portuondo B C	1402 S Grand Blvd	Feln M J	50 Greene Ave	Hillman Oliver S	140 E 54th St
Pote Thomas B	Washington Univ Med Sch	Felnblatt Henry M	616 Carlton Ave	Hochman Charles H	2715 Grand Concourse
Roberts John R	1402 S Grand Blvd	Fink Harold	700 Ocean Ave	Jaffe Henry L	1919 Madison Ave
Schery Chas Wm	529 N Whitlitt St	Franklin William Z	955 Eastern Pkwy	Jeffries Ferdinand M	18 F 41st St
Slobert Walter J	Washington Univ	Grainick Abraham	119 Sumner Ave	Jersky Abraham	100 E 94th St
Thompson Ralph L	607 N Grand Blvd	Grayzel David M	535 Prospect Pl	Jessup D S D	411 W 114th St
Walsh L S Newman	5330 Delmar Blvd	Creeley Horace	140 Clinton St	Kalkski David J	70 E 83d St
Springfield		Halpert Bela	555 Prospect Pl	Klemperer Margit Freund	370 Central Park West
Stone Murray C	200 E Peishing St	Jacobson Sheldon A	460 Lefferts Ave	Klemperer Paul	370 Central Park West
MONTANA		Kantowitz Abraham R	2717 Avenue J	Knox Lella Charlton	St Luke's Hospital
Butte		Lederer Max	555 Prospect Pl	Kopel Moses	1454 Grand Concourse
Peterson Raymond F	Murray Clinic	Marten W Edward	515 Ocean Ave	Lafimore L D	750 Riverside Dr
Great Falls		Meyer Leo W	1814 Avenue J	Lefkowitz Louis L	1041 Tiffany St
Hitchcock E D	Great Falls Clinic	Moltzer Wm Jr	1219 Dean St	Levine Jacob	1345 Shakespeare Ave
Walker Thos F	503 1st Ave N	Morrison Maurice	250 Ocean Pkwy	Lisa James R	New York City Hospital
NEBRASKA		Nidish Edward H	51 Clark St	MacNeil W J	303 E 20th St
Lincoln		Polayes Slik H	425 Prospect Pl	Manhels Perry J	27 W 96th St
Necly J Marshall	816 Sharp Bldg	Wlener Alexander S	64 Portland Rd	McNell Archibald	18 E 41st St
Omaha		Buffalo		Meeker Louise H	303 E 20th St
Eggers Harold E	Univ of Nebr Coll of Med	Bentz Charles A	120 W Humboldt Pkwy	Moolten Sylvan E	60 E 96th St
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SATURDAY, OCTOBER 24 1936

CLINICAL APPLICATION OF HORMONES OF ANTERIOR PITUITARY AND GONADS

Many important advances have been made by clinicians without help from laboratory workers. On other occasions new facts have been determined in the laboratory without aid from the clinicians. Confusion often results when clinicians attempt the premature application of studies begun in the laboratory and not carried to completion.

These remarks are prompted by the confusion now existing in the field of endocrinology, particularly with regard to knowledge of the hormones of the pituitary body and sex glands. This knowledge had its inception only a few years ago, its progress has been slow and uncertain, yet already it is receiving wide clinical application. Workers in research laboratories with every facility at their command have been able to isolate certain active principles, but even when exerting every effort to conduct a controlled experiment there have been disturbing variations in their results. For example, a pituitary fraction that had produced hypertrophy of testes of rats on repeated occasions suddenly and inexplicably produced atrophy of the testes. While disturbing this was not serious—rats have no lawyers to sue for malpractice. However, workers in this laboratory report that it was, and is, besieged with requests for such extracts for injection into man, and that the clinicians in the community where the laboratory is situated are openly critical of the director of the laboratory because "with all that work being done right on our campus we must send elsewhere for extracts for patients." The director of the research laboratories of one of the largest American pharmaceutical houses is much upset by this insistence on the part of clinicians for extracts to be used in the treatment of patients. Recently he remarked, "I have repeatedly sent extracts marked 'for veterinary use only' to men who I thought had good judgment and later received letters reporting 'encouraging results in patients and requesting an additional supply'."

This is regrettable, of course, but perhaps the gentleman protests too much. It may be the boomerang effect of the policies of many commercial laboratories. They are in a highly competitive field wherein the organization that first gets its product into general use is most likely to profit handsomely. Therefore they equip personable and intelligent detail men with a satchel full of new hormones and send them forth to call on members of the medical profession. In many physicians they find men who may feel that they cannot permit the physician across the corridor to learn of new substances which can be injected hypodermically; their wonders to perform while they stand by without a syringe or a new hormone. Thus these physicians demand the hormones as rapidly as they can be separated from the tissues, blood or excreta of animals or man and proceed to inject them into patients for a variety of conditions that have not responded to less dramatic therapy.

Another disturbing feature is that the medical literature is being filled with articles which are almost unanimously enthusiastic and which often give evidence of lack of critical consideration. When a clinician of large experience suggests that these glowing reports have not produced miracles in the treatment of his patients he is referred to as a "mossback" or a "nihilist." For example, it is somewhat difficult to find an article reporting the failure to produce descent of the testes by injection of gonadotropic substance, yet many such failures occur.

The existence of such a discrepancy between the brilliant laboratory observations and their clinical application does no particular harm to a clinician who is well grounded in fundamental knowledge and gifted with critical acumen. It does immeasurable harm to the clinician who relies on the written word as always representing the well digested opinion of an intelligent observer and who regards such opinions as accepted facts worthy of clinical application. A physician engaged in a busy practice who reads these glowing reports tends to undergo a transition from amazement to general interest, to acceptance, to clinical application. What he does not often see in print are the conservative reports or the reports of failure. What he never sees in print, for example, is the report of an experience like that of an endocrinologist who injected an extract into a 15 year old girl for dysmenorrhea. The size of her ovaries seemed normal before the injection were given, at the conclusion of the injections acute appendicitis developed and at operation the surgeon found bilateral cystic ovaries the size of oranges.

These reflections are not intended to inhibit chemical and biologic studies in accredited laboratories. Neither do they apply to the carefully controlled clinical application of accepted knowledge by competent observers; this is necessary. Rather are they intended (1) to emphasize that there is a great discrepancy between laboratory knowledge of the hormones and their clinical

ical application, (2) to suggest that for the present only those clinicians with facilities for critical study be encouraged to administer the newer endocrine preparations to patients and that these clinicians be urged to publish their negative as well as their positive results, and (3) to suggest that a large group of physicians not represented in either of the groups mentioned cease their indiscriminating injection of unknown substances into unsuspecting patients

HYPOCHROMIC ANEMIA AND ALKALI THERAPY IN PEPTIC ULCER

Loss of blood for long periods usually leads to a slow depletion of iron stored in the body and frequently to the subsequent development of a hypochromic anemia. Obviously, successful treatment of the uncomplicated anemia depends on the arrest of the hemorrhages and on the replenishment of the reserve supply of iron. One of the frequent causes of this type of anemia is the chronic loss of blood resulting from peptic ulcer. Since one of the more common methods of treatment of this disease is the use of rather large amounts of alkaline powders daily and since the utilization of iron is known to be unfavorably affected by the presence of alkali in the upper part of the gastro-intestinal tract,¹ questions arise regarding the possible prolongation of periods of anemia in patients with bleeding peptic ulcer because of alkali therapy.

In a recent study at the University of California,² the results of an investigation dealing with the question of the utilization of iron during alkali therapy in patients with peptic ulcer have been described. Four adult male patients with a history of prolonged loss of blood from the gastro-intestinal tract and with an accompanying hypochromic anemia were subjected successively to three different types of treatment: a modified Sippy regimen, a period during which the diet was supplemented by iron in the form of iron-containing foods, as spinach, eggs or beef, and a period during which the alkali therapy was suspended entirely but the supplement of iron-rich foods was continued unchanged. In two of the patients, large doses of inorganic iron in the form of ferric ammonium citrate were subsequently administered. Although there was some variation in the response obtained from the various patients, the general trend of the results was consistent and unmistakable. During the period of unsupplemented alkali therapy there was no significant change in the hemoglobin content, the erythrocyte counts or the percentage of reticulocytes in the blood of the patients. Likewise there was little or no change in the pigment concentration of the blood following the addition of the iron-containing foods to the diet, even though the amounts

given were sufficient to satisfy the daily requirement of normal adults. There was a slight but consistent increase in the number of erythrocytes in the blood, however, which the authors attribute to the absorption from the food ingested of some substance necessary for the formation of cell stroma or for the maturation of erythrocytes. In contrast to these results, the cessation of alkali therapy was followed promptly by a significant reticulosis and a subsequent increase in the concentration of hemoglobin and cells in the blood. In the two cases treated with large doses of inorganic iron further increases in cells and pigment toward normal values were observed. These results appear to warrant the conclusion that the administration of alkali to patients with hypochromic anemia due to prolonged loss of blood from peptic ulcers interferes with the utilization of dietary iron for hemoglobin formation and thus delays recovery from the anemia.

The foregoing investigation emphasizes anew the importance of normal gastric acidity in providing a favorable environment for the proper utilization of dietary iron for the formation of hemoglobin. Other examples are well known, such as the impairment of iron utilization in patients with achlorhydria³ and in experimental animals in which total gastrectomies have been performed.⁴

From a practical standpoint the study indicates that patients given alkali therapy for peptic ulcer complicated by an iron deficiency anemia will remain anemic until alkalinization is discontinued or until large amounts of iron are administered. According to the California investigators the method of choice is to give large doses of inorganic iron, since many foods that are rich in iron favor a recurrence of peptic ulcer, particularly in the absence of alkali therapy.

THE SOVIET UNION REVERSES ITS STAND ON LEGALIZED ABORTION

On May 26 the Central Executive Committee and the Central Peoples' Health Committee of the Soviet Union published the draft of a new law prohibiting abortion except in the presence of stringent indications, thus it completely reversed its stand of 1920, when it legalized artificial abortion. With the interdiction of artificial abortion, except when the life or health of the woman is threatened, a number of measures calculated to lighten the burden of child bearing and of the rearing of large families were proposed. The number of available obstetric hospitals, beds, consultation stations and creches were to be increased so as to make this service universally available. The new law likewise proposed to raise alimony fees, to make divorce more difficult

1 Mettler S. R. and Minot G. R. The Effect of Iron on Blood Formation as Influenced by Changing the Acidity of the Gastrointestinal Contents in Certain Cases of Anemia. *Am. J. M. Sc.* 181: 25 (Jan.) 1931.

2 Kellogg, Frederick, and Mettler S. R. Effect of Alkaline Therapy for Peptic Ulcer on Utilization of Dietary Iron in the Regeneration of Hemoglobin. *Arch. Int. Med.* 58: 278 (Aug.) 1936.

3 Mettler S. R., Kellogg, Frederick, and Rinehart J. F. Chronic Idiopathic Hypochromic Anemia. Etiologic Relationship of Achlorhydria to the Anemia with Special Reference to the Effect of Large Doses of Iron Organic (Dietary) Iron and of Predigested Food upon Formation of Erythrocytes. *Am. J. M. Sc.* 186: 694 (Nov.) 1933.

4 Dragstedt C. A., Bradley J. D. and Mead F. B. Effect of Iron on Hemoglobin Regeneration in Gastrectomized Dogs. *Proc. Soc. Exper. Biol. & Med.* 33: 58 (Oct.) 1935.

and to encourage the rearing of large families. The legislative bodies responsible for the bill asked the people for a free and fearless discussion of the proposed legislation. Opponents of the bill, chiefly women, advanced a number of social reasons, such as the still existing lack of housing facilities, the difficulty in prosecuting study or work and rearing many children at the same time, the ill effect of oft repeated pregnancies on one's health and, last but not least, the encroachment on the woman's right to determine whether she chooses at a given moment to become a mother or not.

The attitude of the medical profession and in particular of the obstetricians and gynecologists is in sharp contrast to these views. The medical profession in the Soviet Union had an unusual opportunity to observe the harmful effects, both early and late, of artificial abortion. Prof. G. A. Baksht,¹ the head of the First Gynecologic-Obstetric Clinic of the Leningrad Medical Institute, states: "The accumulated experience since 1920 furnishes abundant proof that artificial abortion is a serious evil and that the operation, even when performed *lege artis*, leads to a number of injurious effects." Trauma and infection have always constituted a real danger in operative interference with the normal process of labor. The same holds true with even greater force in the case of artificial abortion. The organism of the woman in the first months of pregnancy has not acquired those protective properties which guarantee it a physiologic puerperium. In discussing the operative trauma, Baksht states that the incidence of perforation of the uterus amounted to from 0.01 to 0.11 per cent. This accident not infrequently calls for an immediate laparotomy in order to ascertain probable injury to the intestine, the urinary bladder or the mesentery. Occasionally the uterus has to be sacrificed in a young woman. According to Ulyanovsky (quoted by Baksht), tears of the internal os occurred in 10.5 per cent and led to cicatricial contractions and even to a complete atresia, or served as a portal of infection of the parametrium. Too energetic curettage of the uterine mucosa traumatizes the basal membrane, with the consequent atrophy and depression of the menstrual function.

While micro-organisms enter the uterine cavity after the fourth day in the normal puerperium, about the time of the formation of the protective granulation zone, bacteria were found to be present in the uterine cavity after an artificial abortion on the second day after the operation and their number rapidly increased on the third and fourth days. This is manifested clinically by the frequency of "mild" fever. The high incidence of postabortive fever (40 and 50 per cent according to Rusin) depends on the considerable number of repeated abortions with the attendant subinvolution and latent infection. Chronic pelvic infection

was present in 12.8 per cent in a follow up study of 1,500 cases of artificial abortion.

The extent of biologic trauma is rather difficult to estimate. The introduction of two new glands of internal secretion, the corpus luteum and the placenta, undoubtedly call for especial adaptation on the part of the rest of the endocrine-vegetative system. The effect of the sudden interruption of pregnancy must be to upset the new equilibrium and to lead to endocrine vegetative upsets and to disturbance of the menstrual function and the libido. This is of particular significance when interrupting the first pregnancy in women with an asthenic-hypoplastic constitution. It tends to stabilize infantilism and result in sterility even in the absence of a pelvic infection. Artificial abortion is an important etiologic factor in extra-uterine pregnancy.

The advocates of the bill likewise stress the salutary effect they believe the new law will have on the relations of the sexes, on the irresponsible and frivolous attitude toward the sex problem and on the building of character in the growing generation.

The bill was passed, June 27.

Current Comment

THE DECLINE OF TUBERCULOUS INFECTION

In the September issue of the *American Journal of Diseases of Children*, Beaven¹ discusses the results of tuberculin tests made on 4,982 children between 1 and 14 years of age admitted to the Children's Division of the Strong Memorial Hospital and Rochester Municipal Hospital during the years 1926 to 1934 inclusive. Four hundred and eighty of these children (9.6 per cent) had positive reactions, the majority being in the early age group. As has been frequently found elsewhere, the number having positive reactions to old tuberculin increases as age advances. The significance of the positive reaction is therefore greater in the younger child. Fifty-two per cent of all children from 1 to 14 years of age with a positive reaction to old tuberculin had clinical or roentgenologic evidence of tuberculosis. Similar evidence was present in only 41.2 per cent of the children from 6 to 14 years of age. A positive reaction to old tuberculin in a child appears approximately equal in the two sexes, but boys are more likely to succumb to the infection than are girls. In the series studied, tuberculous children without signs or symptoms of the disease had an incidence of 13.8 per cent of known exposure, while those with clinical or roentgenologic evidence of the disease had an incidence of known exposure of 38 per cent. The decline, and it is perhaps the most significant section of the report, in the proportion of children with positive reaction to old tuberculin during the course of this survey was 62 per cent. This decline in the incidence of tuberculous infection in children has not been accompanied by a change in the relative incidence of the disease. T

¹ Baksht, G. A. Regarding the Prohibition of Abortion. *Sovetskoy Vrachebny Zhurnal*, June 1936, No. 12.

¹ Beaven, P. W. Extent and Nature of the Decline of Tuberculous Infection in Children. *Am. J. Dis. Child.* 52: 565 (Sept.) 1934.

studies suggest that in the last three or four years infection with the tubercle bacillus has been more likely to result in positive clinical or roentgenologic signs than earlier in the survey. During this period, however, the mortality among infected children has changed little if at all. Beaven's analysis furnished credible evidence that tuberculosis among children is decreasing rapidly. This result is apparently due to a lower rate of infected persons rather than to any attenuation in the virulence of the organism causing tuberculosis.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages who are members of the American Medical Association and of county and state medical societies, stand ready day and night, to serve the American people in sickness and in health."

The program will go out on the Blue network instead of the Red, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word 'Blue' for 'Red' where it occurs. Stations to which the program is available are as follows:

New England States

WBZ—Boston
WBZA—Springfield

Middle Atlantic States

WJZ—New York
WFIL—Philadelphia
WSYR—Syracuse
WHAM—Rochester
KDKA—Pittsburgh

East North Central States

WGAR—Cleveland
WLV—Cincinnati
WSAI—Cincinnati
WCKY—Cincinnati
WXYZ—Detroit
WENR—Chicago
WLS—Chicago
WTMJ—Milwaukee
WIBA—Madison
WHIO—Dayton
WIRE—Indianapolis
WOOD—Grand Rapids

West North Central States

KWK—St. Louis
WMT—Cedar Rapids
ASO—Des Moines
KOH—Omaha Council Bluffs
KREN—Kansas City
KSTP—Minneapolis St. Paul
WBEC—Duluth Superior
WDAY—Fargo
KFYR—Bismarck

South Atlantic States

WBAL—Baltimore
WMAL—Washington
WRVA—Richmond
WTAR—Norfolk
WFBC—Greenville S C
WCSC—Charleston S C
WTFE—Raleigh
WWNC—Asheville

WIS—Columbia
WJAX—Jacksonville
WFLA—Tampa
WSUN—Tampa
WIOD—Miami
WST—Atlanta

East South Central States

WAVE—Louisville
WSM—Nashville
WMC—Memphis
WAPI—Birmingham
WJDA—Jackson

West South Central States

WSMB—New Orleans
KVOO—Tulsa
WFAA—Dallas-Fort Worth
WBAP—Dallas-Fort Worth
KTHS—Hot Springs
KTBS—Shreveport
KPRC—Houston
WOAI—San Antonio

Mountain States

KTAR—Phoenix
KGR—Butte
KGHL—Billings
KLO—Ogden

Pacific States

KGO—San Francisco
KECA—Los Angeles
KFSD—San Diego
KEA—Portland Ore
KJR—Seattle
KGA—Spokane

Canada

CRCT—Toronto
CFCE—Montreal

Hawaii

KGU—Honolulu

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Clinical Meeting—The Gulf Coast Clinical Society held its first annual meeting in Mobile, October 16-17. The speakers included Drs. Leon J. Menville, New Orleans, John A. Lanford, New Orleans, Willis C. Campbell, Memphis, George R. Livermore, Memphis, Winchell McK. Craig, Rochester, Minn., Fred H. Albee, New York, Raymond W. McNealy, Chicago, James S. McLester, Birmingham, Lloyd Noland, Birmingham, Louis A. Buie, Rochester, Minn., Orion O. Feaster, St. Petersburg, Fla., Harvey F. Garrison, Jackson, Miss., and Francis E. LeJeune, New Orleans. The Mobile County Medical Society was host at a banquet Friday evening. Dr. McLester gave the address. The society was organized early this year and is composed of physicians from Biloxi, Gulfport, Mobile and Pensacola.

ARKANSAS

Society News—Dr. James Ogden, Fort Smith, discussed trachoma before the Sebastian County Medical Society recently. —The Tenth Councilor District Medical Society was addressed at Fort Smith, September 15, among others, by Drs. Charles T. Chamberlain, Fort Smith, on "The Patient with Heart Disease as a Surgical Risk," and Harry Wilkins, Oklahoma City, "Practical Management of Craniocerebral Injuries." —At a meeting of the Arkansas County Medical Society in Stuttgart, September 8, the following members of the state hospital staff in Little Rock spoke: Drs. John Stathakis, North Little Rock, treatment of syphilis, Elizabeth D. Fletcher, San Antonio, Texas, history of insanity, and Alice C. Kolb, Little Rock, the problem of caring for the mentally abnormal.

CALIFORNIA

Dr. Dock Named Professor of Pathology—Dr. William Dock, associate professor of medicine, Stanford University School of Medicine, San Francisco, has been appointed professor of pathology, effective September 1. Dr. Dock is a graduate of Rush Medical College, Chicago, and has been associated with the department of medicine at Stanford since 1926.

Southern California Medical Meeting—The ninety-fifth semiannual meeting of the Southern California Medical Association will be held in Los Angeles, October 30-31. The following program will be presented:

Dr. John Edwin Kirkpatrick, Los Angeles: Immediate Repair of Divided Nerves and Tendons of the Hand.

Dr. Alvin G. Foord, Pasadena: Normal Hematologic Standards with Discussion of Variations Due to Physiologic Changes.

Dr. Hermon C. Bumpus, Jr., Pasadena: What May We Expect from the Treatment of Tumors of the Bladder?

Dr. Charles M. Taylor, Los Angeles: Proctology in General Medicine.

Dr. Elliott P. Joslin, Boston: Insulin Protamine and the New Era in Diabetes.

Dr. Emil Bogen, Olive View: Medical Aspects of the Business Cycle.

Dr. Isaac Y. Olch, Los Angeles: Results of Surgical Treatment of Hyperparathyroidism.

Dr. Francis M. Smith, San Diego: Anemia as a Cause of Angina Pectoris.

Dr. Hans von Briesen, Los Angeles: General and Neurosurgical Consideration of the Cerebral Birth Palsies.

Dr. John B. Renshaw, Glendale: Gastroscopy as an Aid in the Diagnosis of Malignant Lesions of the Stomach.

Dr. William Benbow Thompson, Los Angeles: Cesarean Sections in Los Angeles County.

Dr. George Piness, Los Angeles: Allergic Study of Feather Protein.

Drs. Merrill W. Hollingsworth and John J. Montanus, Santa Ana: Relationship of Low Basal Metabolic Rates to Allergic Disease.

COLORADO

Society News—The Mesa County Medical Society was addressed in Grand Junction, September 15, by Dr. Robert J. Groom, Grand Junction, on "Diarrheas in Infants." —The Medical Society of the City and County of Denver was addressed, October 6, by Drs. Gerrit Heusinkveld on obstetrics, and Bernard N. E. Cohn on the normal and pathologic physiology of joints. —The Colorado Hospital Association will hold its annual meeting at the University of Colorado School of Medicine and Hospitals, Denver, November 4. —Dr. George E. Rice, Pueblo, addressed the Pueblo County Medical Society.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each weekly issue of *THE JOURNAL*. The topics and speakers for the next three programs are as follows:

October 27: Help for the Hard of Hearing. W. W. Bauer, M.D.

November 3: Community Sanitation. Morris Fishbein, M.D.

November 10: Noise. Morris Fishbein, M.D.

The time of the broadcast is Tuesday afternoon at 5 o'clock eastern standard time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time).

October 6, on "The Approach to a Diagnosis in Thyroid Disease."—The Delta County Medical Society was addressed, October 2, by Dr. Albert C. McClanahan, Delta, on "Does Morphine Inhibit Intestinal Peristalsis?"

DELAWARE

Society News—Dr. George H. Cross, Chester, Pa., discussed "Magnetic and Nonmagnetic Foreign Bodies in the Eye and Their Methods of Removal" before the New Castle County Medical Society in Wilmington, September 15.

GEORGIA

District Meeting—The Fifth District Medical Society held its annual meeting at the Academy of Medicine, Atlanta, October 15. Drs. Benjamin H. Minchew, Waycross, and George A. Traylor, Augusta, president and president-elect, Medical Association of Georgia, attended the meeting. Papers were presented, among others, by Drs. Joseph Earle Moore, Baltimore, on "Management of the Wassermann-Fast Patient", William A. Smith, Atlanta, "Quinine Treatment of Myotonia Congenita" and Joseph Yampolsky, Atlanta, "Use of Stovarsol and Stovarsol and Bismuth in the Treatment of Syphilis in Children."

Changes at Medical School—Dr. Richard Torpin, clinical instructor in obstetrics and gynecology, Rush Medical College, Chicago, has been appointed associate professor of obstetrics and gynecology and chairman of the department at the University of Georgia School of Medicine, Augusta. Dr. Alfred P. Briggs, assistant professor of internal medicine, St. Louis University School of Medicine, St. Louis, has been named associate professor of biochemistry and of medicine. Fourth year medical students at the university were required to assist in making physical examinations of newly enrolled students in the various units over the state during September, in accordance with an order by the board of regents.

ILLINOIS

Personal—Dr. Brian J. Carder, deputy health commissioner of Berwyn township for the past three years, has been appointed commissioner to fill the unexpired term of the late Dr. Edward J. Farrell. Dr. Frederick A. Causey, assistant managing officer of the Chicago State Hospital, has been appointed acting managing officer of the Lincoln State School and Colony, Lincoln. Dr. Phillip S. Waters, Alton, managing officer of the Lincoln school, has been granted a leave of absence on account of illness.

Thirteen Per Cent Too Slow to Drive Fast—Tests given to 4,271 persons at the Illinois State Fair in August show clearly that large numbers of people are not physiologically able to maneuver automobiles at high speeds under emergency conditions with the split-second skillfulness that must be employed to prevent accidents, according to the state department of health. The tests revealed that 13 per cent of the men and 33 per cent of the women required more than one-half second to apply the brakes on a car after the flash of a danger signal. In addition the tests showed that a noticeably higher percentage of persons over 35 reacted slowly about 20 per cent of the older and 12 per cent of the younger group requiring more than one-half second to apply the brakes. About one-third of the men and two-thirds of the women tested made poor scores on steering ability. The state department of health points out that the worst time of the year for traffic accidents in Illinois is usually in the last three months of the year. In 1935 there were 713 deaths during the last quarter against 597, 518 and 506 in the third, second and first quarters respectively. To date this year, mortality from traffic accidents has been almost parallel with that of 1935, indicating that about 700 more persons will be killed in Illinois before January.

Chicago

Dr. Lewis Gives Bevan Lecture—Dr. Dean DeWitt Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, delivered the eighth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society, October 2. His subject was "Endocrinology and Surgery."

Dr. Kanner Appointed to School of Dentistry—Dr. Oscar Kanner, formerly of Vienna, has been appointed professor of general histology, bacteriology and pathology at Loyola University School of Dentistry (Chicago College of Dental Surgery). He succeeds the late Dr. Emanuel Fink. Dr. Kanner graduated in medicine at the University of Vienna in 1921. He came to the United States in 1927.

Large Gift to Wesley Hospital—Securities valued at more than \$1,000,000 were given to Wesley Memorial Hospital, October 14, by George Herbert Jones, formerly president of the Inland Steel Company. The money will be used to erect the first unit of a proposed new \$5,000,000 group of hospital buildings at Chicago Avenue, Fairbanks Court and Superior Street, near Northwestern University's McCormick Campus.

Personal—Samuel J. Beck, Ph.D., recently of the department of psychiatry, Harvard Medical School and Boston Psychopathic Hospital, Boston, has been appointed in charge of the psychology laboratory in the department of psychiatry at Michael Reese Hospital. Dr. Hugh Ernest Griffiths, London, and F. A. Lyon, secretary, Seamen's Hospital Society, Greenwich, England, will spend a few days in Chicago visiting various hospitals.

Symposium on Oxygen Therapy—The Chicago Medical Society will devote its meeting, November 4, to a symposium on oxygen therapy with the following speakers:

- Dr. Ford H. Hick, associate in medicine, University of Illinois and the staff of the Illinois Research Hospital, Physiology of Oxygen, Want with Discussion of Symptoms.
- J. I. Banash, consulting engineer, Accepted Methods of Administration to Assure Therapeutic Dosage.
- Dr. M. Herbert Barker, associate in medicine, Northwestern University School of Medicine, Clinical Response to Oxygen Therapy.
- Dr. Ralph M. Waters, professor of anesthesia, University of Wisconsin Medical School, Madison, Postoperative Use of Oxygen.
- Dr. Robert W. Keeton, professor of medicine, University of Illinois College of Medicine, will open the discussion.

INDIANA

Society News—The Dearborn Ohio County Medical Society was addressed in Lawrenceburg, September 24, by Dr. Daniel J. Davies, Cincinnati, on rupture of the uterus. At a meeting of the Montgomery County Medical Society in Crawfordsville, September 24, Dr. Foster J. Hudson, Indianapolis, discussed the care of new-born infants. Dr. Charles O. McCormick, Indianapolis, addressed the Boone County Medical Society in Lebanon, September 15, on rectal ether oil analgesia in labor. The Fountain-Warren County Medical Society was addressed in Kramer, October 1, by Dr. Donald C. McClelland, Lafayette, on treatment of cancer. Dr. Hugh A. Cowing discussed insulin protamine before the Delaware-Blackford County Medical Society in Muncie, September 29.

Public Health Conference—The forty-second annual conference of Indiana health officers was held at the Jefferson Plaza Hotel, South Bend, October 5-6. Speakers included Walter S. Frisbie, Ph.D., chief division of state cooperation, Federal Food and Drug Administration, Washington, D.C., on "Food and Drugs in Relation to Public Health", Dr. Calvin C. Applewhite, U.S. Public Health Service, Chicago, "Full Time Local Health Departments" and Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York, "What Next?" A symposium on syphilis, including the following speakers, concluded the session: Drs. Arthur F. Weyerbacher, Indianapolis; Minor W. Miller, Evansville; Ernest O. Asher, New Augusta, and Alfred S. Giordano, South Bend.

IOWA

Personal—George D. Stoddard, Ph.D., professor of psychology, State University of Iowa, Iowa City, and director of the Child Welfare Research Station, has been made dean of the Graduate College of the university, succeeding Carl E. Seashore, Sc.D. On the latter's retirement he was made dean emeritus.

Health Lectures for High School Students—The Crawford County Medical Society is presenting a course in public health for all high school students in the county. A course of nine lectures, one for each month of the school year, has been arranged on a rotating schedule, so that each talk will be given to every high school during the school year. Fifteen minutes of each period will be devoted to the lecture and ten minutes at the end of the period will be allowed for questions from the students. The society plans to make this an annual course. The program to be presented this year is as follows:

- Dr. Henry D. Jones, Schleswig, Heart Diseases and How to Prevent Them.
- Dr. Dora E. Kiehlnhorn, Zanesville, Characteristic Epidemic Contagious Diseases and Their Complications.
- Dr. Thomas L. Vineyard, Dow City, Care of the Digestive Tract.
- Dr. Edward M. Mark, Manila, Kidney Infections in Youth.
- Dr. Carl A. Soc, Manila, Tuberculosis in High School Age.
- Dr. G. K. Fair, Denison, Immunizations That Are Successful.
- Dr. Claudius L. Sievers, Denison, Functions and Dysfunction of the Ductless Glands.
- Dr. Amundus H. Grau, Denison, Epidemic Infections of the Brain and Spinal Cord.
- Dr. John James Duffy, Denison, Venereal Infections in the Female.

Society News—Drs Hamilton Montgomery and Frederick A. Figi, Rochester, Minn., addressed the Decatur County Medical Society, September 22, on "Skin Carcinomas and Related Lesions"—At a meeting of the Pottawattamie County Medical Society, September 21, Dr Charles H. Watkins, Rochester, Minn., spoke on "Blood Dyscrasias"—Dr Elliott P. Joslin, Boston, will address the Linn County Medical Society, Cedar Rapids, October 27, on "Treatment of Diabetes"—Dr Harry H. Lamb, Davenport, was elected president of the Iowa Association of Ophthalmology and Otolaryngology at its annual meeting in Marshalltown, September 16; the next annual session will be held in Des Moines—A symposium on undulant fever was presented before the Boone-Story Medical Society, September 23, at Ames—The Cerro Gordo County Medical Society was addressed in Mason City, October 13, by Drs Hiram Winnett Orr, Lincoln, Neb., on "Treatment of Compound Fractures," and Draper L. Long, Mason City, on "Indication and Methods of X-Ray Pelvimetry"—Dr George B. Eusterman, Rochester, Minn., addressed the Clinton County Medical Society in Clinton, September 3, on diagnosis and therapy of gastroduodenal disorders; and Dr Daniel L. Sexton, St. Louis, October 1, on endocrinology—The speakers before the Dubuque County Medical Society in Dubuque, September 22, included Drs Budd C. Corbus, Chicago, on "Intradermal Immunization in Gonorrheal Infections," Earl C. Sage, Omaha, "Errors Made in Obstetrical Practice," and Frederick H. K. Schaaf, Minneapolis, "Liver Function and Differential Diagnosis of Jaundice."

MAINE

Personal—Dr John T. Shaw, who resigned as superintendent of Central Maine Sanatorium, Fairfield, in 1932, has been again named to the position to succeed Dr Arthur Paul Wakefield.

MARYLAND

The Dohme Lectures—Dr Charles H. Kellaway, director, Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Australia, will deliver the Dohme Lectures at the Johns Hopkins University School of Medicine, Baltimore, November 5-7. The titles of these lectures are "Snake Venoms: Their Constitution and Therapeutic Applications," "The Peripheral Action of Snake Venoms," and "Snake Venoms and Immunity."

MICHIGAN

Graduate Instruction in Obstetrics—The bureau of child hygiene and public health, state department of health and the department of postgraduate medicine, University of Michigan Medical School, Ann Arbor, are cooperating in a graduate course on obstetrics now under way in Traverse City, Petoskey, Alpena and Graveling. Dr Alexander M. Campbell, Grand Rapids, chairman of the maternal health committee of the state medical society, is presenting the lectures. Subjects include maternal and fetal mortality, antepartum care, toxemias of pregnancy, conduct of normal labor and postpartum care. These lectures, which will continue for six weeks, are a part of the state's social security program.

Michigan's Health in 1935—With 51,051 deaths from all causes in 1935, Michigan had a mortality rate of 10.05 per thousand of population. Organic heart disease, with 9,578 deaths, again led the list of ten principal causes of death. Next in order was cancer with 5,187 deaths, apoplexy with 3,907 deaths, pneumonia, 3,805, and nephritis, 2,974 deaths. According to the state health department, these five causes occupied the same relative positions as in previous years. Coronary disease and angina pectoris replaced accidents exclusive of automobile accidents, as the sixth major cause of death, with 2,352 deaths recorded in 1935. There were 2,161 deaths from accidents in the home, in occupations and in other pursuits where automobiles did not figure, the department pointed out. Tuberculosis continued to decrease, 2,045 deaths were recorded as compared with 2,199 in 1934. Automobile accidents appeared ninth on the list of leading causes of death, while diabetes remained in tenth place with a total of 1,230.

MINNESOTA

Illegal Practitioner Ordered to Leave State—Francis Howard Punchard, Sr., alias J. Francis Clark, following thirty-three days in the Minneapolis City and County Jail, pleaded guilty to a charge of practicing healing without a basic science certificate, October 5. He was given a suspended sentence of six months in the Minneapolis Workhouse provided he left the state in one week and did not return for five years. Punchard, who is not licensed to practice medicine in any

state, was arrested following an investigation of the state board of medical examiners, which disclosed that he had been posing as a skin and cancer specialist. Unable to furnish a bond of \$2,000, he was placed in jail.

Society News—Dr Oscar O. Larsen, Detroit Lakes, was again elected president of the Northern Minnesota Medical Association at the annual meeting in Fergus Falls, August 31-September 1. Other officers are Drs Emmett A. Heiberg, Fergus Falls, vice president, and John F. Norman, Crookston, secretary—The Stearns Benton County Medical Society was addressed in Sauk Center, September 17, by Drs Joseph C. Michael and Olga S. Hansen, both of Minneapolis, on "Some Neuropsychiatric Considerations in Cases of Trauma—Accidental Injuries" and "Cardiac Disorders of Particular Interest to the General Practitioner"—Dr Alexander E. Brown, Rochester, discussed jaundice before the Washington County Medical Society, September 8—Dr Richard H. Jaffe, Chicago, will address the Hennepin County Medical Society, Minneapolis, November 2, on "Diseases of the Reticulo-Endothelial System."

MISSISSIPPI

Society News—At a meeting of the Winona District Medical Society in Winona, September 24, speakers included Drs Wallace L. Chambers, Lexington, on Vincent's infection of the chest, J. H. Eugene Rosamond, Memphis, infantile paralysis, and Eugene J. Johnson, Memphis, local anesthetics in certain abdominal conditions—At a meeting of the South Mississippi Medical Society in Laurel, September 11, the speakers included Drs Charles J. Bloom, New Orleans, on pediatrics, Henry T. Simon, New Orleans, infantile paralysis from the orthopedic point of view, John Gould Gardner, Columbia, infection of the hand, and Henry G. McCormick and the Hon. Ellis Cooper of Laurel, the legal use of the x-ray plate—The Marshall County Medical Society has been organized with headquarters in Holly Springs. Officers are Drs Curtis R. Senter, Byhalia, president, Ira B. Seale, Holly Springs, vice president, and Herbert S. Phillips, Holly Springs, secretary.

NEW JERSEY

"Pharmacy Internship" in New Jersey—A recent amendment to the New Jersey pharmacy practice act has enabled the board of pharmacy to prescribe the conditions under which a pharmacy graduate must obtain the one year's practical experience required precedent to registration as a pharmacist. That experience must be obtained in an "Approved Training Pharmacy" which conforms to certain regulations promulgated by the board. A pharmacy desiring to be so classified must make application for registration as an "Approved Training Pharmacy," and the list of such pharmacies is to be revised annually. During his internship the pharmacy graduate must, under the supervision of a registered pharmacist personally compound at least 600 prescriptions and take part in the sale of poisons at least sixty times. He must familiarize himself with the manufacture and wholesale distribution of drugs and must visit from three to five physicians for the purpose of discussing the prescribing of U. S. P. and N. F. preparations. Complete records of pharmacy internship must be kept by the pharmacy intern and by his employer, in a book supplied by the board of pharmacy, and these records must be submitted to the board when the application is filed for registration as a pharmacist. The board rules prescribe in detail the activities in which a pharmacy graduate must engage during his internship and provide generally that he must keep abreast of developments in pharmacy by additional study, attendance on lectures, and in other designated ways.

NEW YORK

New Bulletin—The Onondaga Medical Society and the Syracuse Academy of Medicine are publishing a joint bulletin, the first issue of which appeared in September.

Personal—Dr Alvah P. Maine Webster, celebrated his ninetieth birthday, September 21. Dr Maine graduated from the University of Pennsylvania in 1870 and established his practice in Webster in 1878.

Cornerstone for New Medical Building—President Roosevelt laid the cornerstone of the new building for the University of Syracuse School of Medicine, September 29. The building, which is being constructed as a WPA project at a cost of \$1,250,909, will be completed next year. It is a unit in a medical center that now contains the City Hospital, Syracuse Memorial Hospital and the Syracuse Psychopathic Hospital.

New York City

Dr Martland Reorganizes Department of Forensic Medicine—The department of forensic medicine, New York University College of Medicine has been reorganized under the direction of Dr Harrison S. Martland, Newark. In addition to undergraduate work, the department has developed graduate instruction leading to the degree of doctor of medical science and short, intensive courses in specialized branches of medico-legal work. The Charles Norris Fellowship in Forensic Medicine has been established, which is open to candidates applying for work toward the degree. Dr Martland succeeded the late Dr Charles Norris as professor of forensic medicine in January 1936. The latter had held the position since the establishment of the department in 1933.

Lectures on the Art and Romance of Medicine—The New York Academy of Medicine has opened a series of lectures to the public on "The Art and Romance of Medicine." Dr Smith Ely Jelliffe gave the first lecture, October 8, on "The Historical Background of Psychiatry." Other lecturers will be

Dr Francis G. Benedict, director, Nutrition Laboratory, Carnegie Institution of Washington, Boston, November 12; "The Physiological Chase of the Circus Elephant."

Dr Charles R. Stockard, professor of anatomy, Cornell University Medical College, December 10; "The Mechanisms of Heredity."

Dr Karl Vogel, associate professor of clinical pathology, College of Physicians and Surgeons, Columbia University, January 14; "Medicine at Sea in the Days of Sail."

Dr Frederick Tilney, professor of neurology and neuro-anatomy at Columbia, February 11; "The Evolution of the Human Brain."

Dr Henry E. Sigerist, director, Institute of History of Medicine, Johns Hopkins University, Baltimore, March 11; "The History of Medical History."

Dr Victor G. Heiser, president, International Leprosy Association, April 8; "The History of Leprosy."

Dr Walter Timme, professor of clinical neurology at Columbia, May 13; "The Story of the Glands of Internal Secretion."

OHIO

Course in Endocrinology—The Mahoning County Medical Society is sponsoring a graduate course in endocrinology in Youngstown, consisting of ten lectures by D. Roy McCullagh, Ph.D., and Dr Ernest Perry McCullagh, Cleveland. The series began September 23 to continue on succeeding Wednesday evenings.

Advisory Health Board—With the appointment of Drs. Carl S. Mundy, Stanley D. Giffen and Paul M. Holmes, an advisory health board has been created for Toledo. It will act in a purely advisory capacity on all municipal health matters and confer with the city manager, the welfare director and the health commissioner on current problems of the health department.

Personal—Dr Chester W. Waggoner, Toledo, has been appointed a member of the state medical board. Wilton Marion Krogman, Ph.D., Cleveland, associate professor of anthropology, Western Reserve University School of Medicine, has been awarded the \$1,000 prize of the *Readers Digest* for his article on "The Skeleton Speaks," giving an account of some of his medicolegal interpretations of crime.

Society News—Dr Justin M. Waugh, Cleveland, addressed the Hancock County Medical Society, Findlay, September 18 on "Deep Infections of the Neck."—At a meeting of the Ohio chapter of the American Physiotherapy Association in Cleveland, October 17, Dr Rudolph S. Reich spoke on "Supracondylar Fractures of the Elbow," and Dr Joseph L. Fetterman, "Cerebral Palsy." A clinic was held in the morning at Mount Sinai Hospital.—Dr Max M. Peet, Ann Arbor, discussed "The Present Status of the Surgery of the Sympathetic Nervous System" before the Toledo Academy of Medicine, October 2.

Toledo Teachers Must Have Physical Examination—In accordance with a recent ruling of the board of education, an annual health certificate will be required of all teachers and other employees of the Toledo public schools immediately prior to the opening of the schools for the fall term. Examination and health certificate forms will be furnished each teacher and these are to be filled out, signed and certified to by the examining physician, preferably the family practitioner. A code system will be used to keep the report confidential. This measure has been adopted as a safeguard to the health and efficiency of the individual teacher as well as a health protection to the school child according to the *Bulletin* of the Toledo Academy of Medicine.

Health at Columbus—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended October 10 indicate that the highest mortality rate (20.5) appeared for Colum-

bus and that the rate for the group of cities was 11. The rate for Columbus for the corresponding week of 1935 was 11.7 and that for the group of cities 10.5. The annual rate for the eighty-six cities for the forty-one weeks of 1936 was 12.1, as compared with 11.4 for the corresponding period of 1935. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

PENNSYLVANIA

Hospital Seminar—The seventh annual graduate medical seminar of the Easton Hospital, Easton, was presented October 21. The speakers were Drs. Norman M. Keith, Rochester, Minn., on "The Action and Use of Diuretics," Wallace M. Yater, Washington, D. C., "Arteriography in Peripheral Vascular Disease," and Walter E. Dandy, Baltimore, "Diagnosis and Treatment of Cranial Nerve Lesions."

Philadelphia

Hospital News—The Skin and Cancer Hospital of Philadelphia has recently added two new wards of ten beds each for treatment of cancer, especially patients in advanced stages.—The board of managers of the Germantown Dispensary and Hospital gave a garden party October 3 for inspection of the hospital and the newly opened building for research on respiratory diseases.

Society Aids in Medical Relief—The Philadelphia County Medical Society will provide medical care to persons on relief for the period September 25-December 31, according to the *Weekly Roster and Medical Digest*. This action was acknowledged in a resolution adopted by the society following the announcement by the State Emergency Relief Board that it had abandoned medical relief service as of September 19. The members of the Philadelphia Association of Retail Druggists will cooperate with the medical society by donating their services and making only the lowest possible charge covering a portion of the ingredients and container. It was believed that, on U. S. P. remedies, this fee could be kept at a minimum of possibly 25 cents for each prescription. Persons on emergency relief needing medical care are urged to go to the physician of their choice. When unable to find a physician who will treat them free, they may telephone the office of the county medical society, who will give them a list of the cooperating physicians in their neighborhood. Under the society's plan, physicians have agreed to treat free only persons who at the time of their visits are on emergency relief and are not already receiving free treatment at a dispensary.

Pittsburgh

Pediatric Institute—The second of a series of three pediatric institutes sponsored by the state department of health and the Medical Society of the State of Pennsylvania was held at the Allegheny General Hospital, Pittsburgh, October 14. The speakers were Drs. James K. Everhart on "Appraisal of the Child," James L. Foster, "Gastro-Intestinal Disturbances and Infant Feeding," and Joseph S. Baird, "Contagious Diseases with Immunology." The last pediatric institute in the county will be held October 28 at the Western Pennsylvania Hospital.

PHILIPPINE ISLANDS

Dr Calderon Retires—Dr Fernando Calderon, J. Roca has retired as dean of the University of the Philippines College of Medicine, director of the School of Hygiene and Public Health, head of the department of gynecology and director of the Philippine General Hospital. Dr Calderon is 70 years old and was graduated from the University of Santo Tomas College of Medicine and Surgery, Manila, in 1891.

Lepers Demand Freedom—Several hundred lepers broke out of San Lazaro Hospital in Manila, October 6, and marched through the streets to the presidential palace to protest against being held as "prisoners," the *New York Times* reported. They contended that persons suffering from tuberculosis were more dangerous to the public than those afflicted with leprosy. On the promise of the secretary to President Quezon that he would present their views to the president, the lepers were taken back to the hospital.

Association Opposes Schools of Chiropody—The council of the Philippine Islands Medical Association at a meeting in July approved a resolution protesting against a bill introduced in the national assembly "to regulate the practice of chiropody." By the resolution the council protested against

establishment of chiropody, declaring that there is no real demand for practice of chiropody and if there should be any future demand for treatment of ailments of the feet and legs "there is even now an adequate supply of qualified medical practitioners who, with more competence, can render such service." The resolution also expressed the opinion that official recognition of the practice of chiropody "will ultimately result in the exploitation of the credulous public through exaggerated claims, thereby resulting in actual harm and injury to the health and lives of our people."

GENERAL

The Military Surgeons' Meeting—The forty-fourth annual convention of the Association of Military Surgeons of the United States will be held at the Hotel Book-Cadillac, Detroit October 29-31, under the presidency of Dr. Charles M. Griffith, Washington, D. C., medical director, Veterans' Administration. The speakers will include

Dr. Philip B. Matz Washington Diabetes Mellitus Among Veterans of the World War

Dr. Frederick G. Buesser Detroit Treatment of Peptic Ulcer

Dr. Frederick A. Collier Ann Arbor Gas Bacillus Infection in Civil Life

Leigh C. Fairbank, D.D.S. Washington Medical and Dental Liaison in the Military Forces

Stanley W. Clark D.D.S. Chicago Recent Research in Local Anesthesia with Reference to the Development of the Alkaline Solution

Dr. William W. Hall Mare Island M. C. U. S. Navy Active Immunization Against Tetanus with Tetanus Toxoid

Dr. Irwin B. March Mount Clemens Mich. M. C. U. S. Army Aviation Medicine

Dr. George W. Crile Cleveland Eighteen Years After

Acute Accidental Poisonings—A study of the records of 298 persons insured in the industrial department of the Metropolitan Life Insurance Company who died of acute accidental poisoning during 1934-1935 reveals that ninety were children under 5 years of age, according to the *Statistical Bulletin*. The manner of poisoning was given on 84 per cent of the death records and may be roughly grouped into three classes: poisonous substances picked up and consumed by children; poisons mistaken for medicines and overdoses of medicines; and ignorant use of substitutes for alcohol and fluids mistaken for alcoholic beverages. Poisonous substances picked up and consumed by children were responsible for eighty-two deaths. Strychnine caused the deaths of thirteen children; drinking kerosene caused thirteen deaths, and, in addition, there were seven deaths from gasoline, benzene and other petroleum products. Mistaking poisonous drugs for medicines or overdoses of medicines containing poisons accounted for seventy-eight deaths. Veronal (barbital), luminal (phenobarbital), alonal (allylisopropylbarbituric acid and aminopyrine) and amytal led the list, with a total of fourteen deaths; mercury bichloride with nine deaths was next in order; lysol (saponated solution of cresol) caused six deaths; arsenic, acetanilid and paraldehyde with four deaths each were next in numerical importance. The bulletin offers suggestions and safeguards to educate the public in an effort to reduce these accidental deaths.

Radio Forum—Growth of the Child—The American Academy of Pediatrics, the National Broadcasting Company and the National Congress of Parents and Teachers are cooperating in a radio forum on the growth and development of the child. Dr. Norman C. Wetzel, Babies and Children's Hospital, Cleveland, is editor. The series, which opened October 21, will continue each week until May 19. For the next two months the program will be as follows:

Dr. George L. Streeter director department of embryology Carnegie Institution of Washington Baltimore October 28 Prenatal Growth

Dr. Harry Bakwin, assistant professor of pediatrics New York University College of Medicine November 4 Growth of Infants

Dr. Horace Gray, clinical professor of medicine Stanford University School of Medicine, San Francisco November 11 Growth of the Adolescent

Richard E. Scammon LL.D. Distinguished Service Professor Graduate Faculty, University of Minnesota November 18 Growth of Organs

Earnest A. Hooton Ph.D. professor of anthropology Harvard University Cambridge, November 25 Our Ancestors

Amos H. Herish Ph.D. associate professor of biology Western Reserve University Cleveland December 2 Does Like Beget Like?

Dr. Harold C. Stuart assistant professor of pediatrics and child hygiene, Harvard University Medical School Boston December 9 Measurements of Growth

Dr. Alfred H. Washburn associate professor of pediatrics University of Colorado School of Medicine Denver December 16 Individual Variations in Infants and Children

Elmer V. McCollum Sc.D. professor of biochemistry Johns Hopkins School of Hygiene and Public Health Baltimore December 23 Foods and Growth

Dr. Samuel Z. Levine professor of pediatrics Cornell University Medical College, New York December 30 Chemical Elements and Their Part in Body Growth.

These lectures are being given over the Blue network of the National Broadcasting Company every Wednesday afternoon at 4 o'clock eastern standard time.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 8, 1936

New Test for Estimating the Toxicity of Mineral Oils

The Manchester Committee on Cancer has just issued its report for 1935. Dr. C. C. T. Woot, director of the Cancer Research Laboratories, states that since the publication of the last report a new test has been devised for assessing the toxicity of mineral oils. Having found a simple method by which the approximate carcinogenicity of a mineral oil could be rapidly ascertained—by examination of its refractivity—they investigated how the animal cells reacted to oils and thus brought the new test to light. The test shows not only the probable carcinogenicity of an oil but also its probable power of causing dermatitis. It is performed by injecting a few drops of oil into an animal and recovering it for examination as to its physical characteristics. The basic principle of the test is that if the oil is toxic the animal will alter its physical characteristics, while nontoxic oil remains unaltered. When the animal reacts against the toxic oil, a fall is produced in the refractive index roughly proportional to the carcinogenicity plus the dermatogenicity of the oil.

The following conclusions have been reached: 1. The fall in refractive index is proportional to the degree of unsaturation or dehydrogenation of the oil. 2. There is no change in the refractive index of such oils as medicinal liquid petrolatum, squalene (a highly unsaturated pure hydrocarbon oil obtained from the liver of the dogfish) and cylinder stocks, all of which cause little or no reaction in the skin of an animal when placed in contact with it. 3. The refractive index fall varies inversely as the viscosity of the original oil. 4. There is a definite correlation between fall of refractive index and carcinogenic potency, viscosity and refractivity. The practical importance of these researches lies in their bearing on "mule spinners' cancer" (cancer of the scrotum due to contact with the oil used for lubrication in their work). A noncarcinogenic oil can be selected for use.

Another line of research was investigation of the oily tarry material recovered from soot emitted from the exhaust of high compression internal combustion engines. The soot contained about 3 per cent of this liquid material and when placed in contact with the skin of animals proved carcinogenic. The activity of this material was high—about that to be expected in view of the activity found by previous experiments on mineral oils cracked at different temperatures. It appears that at a certain critical temperature mineral oils regardless of their actual carcinogenicity, can be brought by cracking to a more or less constant carcinogenicity.

Research at the Royal College of Surgeons

The annual report of Dr. Beattie, the conservator of the museum and director of research of the Royal College of Surgeons, contains reports of important researches carried out during the year.

THE NERVOUS FACTOR IN TRAUMATIC SHOCK

Mr. O. Shaugnessy and Dr. Slome have continued their investigations on traumatic shock. In previous work they concluded that some other factor than fluid loss and tissue toxins was necessary to account for the shock that follows severe trauma. They therefore investigated the nervous factor and showed that in the period during which there is a marked fall in blood pressure there are continuous discharges of nerve impulses from the traumatized area. These impulses have been photographed by means of a cathode ray oscillograph. Their

investigations are proceeding along the lines of determining the exact nerve endings from which these impulses arise and the factors inducing their production. They are also concerned with the exact level in the nervous system at which these impulses produce their depressor effect on blood pressure. They have taken as the criterion of the intensity of the shock the lowering of the blood pressure in the general circulation, which seems to be the only one at present available for quantitative study. Their experiments in blocking the impulses by means of spinal anesthesia have suggested a possible line of treatment for the shock condition.

THE TOXIC FACTOR IN INTESTINAL STRANGULATION

Mr G. C. Knight and Dr. David Slome have investigated the toxic factor in intestinal strangulation. They demonstrated the presence of a toxin (which caused marked depression of blood pressure and even death when injected intravenously into a normal animal) in the peritoneal fluid surrounding non-viable loops in the venous blood of the loops of all types, viable and nonviable, in the thoracic duct during absorption and in the urine. Using loops that had been completely cleared of intestinal content by irrigation, they showed that the toxin arises within the wall of the strangulated segment and passes thence into the lumen and into the venous blood and lymphatics. It appears to be a new product formed as a direct result of strangulation and not a substance previously existing in the intestinal lumen, which has merely been absorbed. Whether it arises from metabolic changes or bacterial action is being investigated. It has been demonstrated within half an hour of the onset of strangulation. Further experiments have been performed in order to assess the importance of the return of the toxic substance to the general circulation following relief of the strangulated loop. In certain cases, even of a viable type, relief of the strangulation is accompanied by a marked fall in blood pressure, and occasionally death ensues. An attempt is being made to determine the factors that govern these phenomena. Some early experiments in man show that a similar depressor substance is present in high concentration in the dialysate of the urine of patients with intestinal strangulation, whereas the dialysate of normal urine has no effect on blood pressure or contains only a minute quantity of the substance. After a period of twelve hours a similar depressor substance has been found in the peritoneal fluid in human cases but could not be found before this period in five cases. This may be of significance as the twelve hour period has been shown to be the critical time at which the mortality begins to rise from nothing to 30 per cent and thereafter to 60 or 80 per cent at the forty-eight hour period. Biologic tests with preparations of the isolated uterus and intestinal strips indicate that the toxic substance is different from histamine or acetylcholine.

NERVE GRAFTING

The late Dr. A. B. Duval stated that degenerated nerve grafts, taken either from the individual in whom the graft was placed or from another of the same species, was more efficacious than grafts not degenerated. Miss Hill and Mr. Bentley have completed a series of experiments which show that: 1. A nerve graft, whether autogenous or homogenous, will serve to bridge a nerve gap and allow a large number of axons to reach the distal segment. 2. There is no difference in the time of recovery of function between animals which have had fresh and which have had degenerated grafts. 3. The number of new growing axons that pass into the distal segment is determined by the amount of scar tissue formed at the junction of the nerve with the graft and the amount of scar tissue that has developed within the central end of the grafted nerve at the upper line of junction. They conclude that to reduce the production of scar tissue to a minimum and thus obtain the best results—absolute approximation and almost exact equality of size of the cut ends of the graft and the nerve—are essential.

PARIS

(From Our Regular Correspondent)

Sept. 12, 1930

Recent Changes in Social Insurance Laws

Although the Social Insurance Law, when first enforced in 1930, was considered an ideal one by its proponents, a number of modifications have already been made. In the fall of 1930 a complete revision was legalized, but this practically revamped law did not go into effect until the spring of 1931, a delay which has caused much confusion. The law as it now stands is briefly as follows. Some recent (August 26) changes will be cited later.

RELATIONS BETWEEN THE INSURED AND THE SOCIAL INSURANCE AUTHORITIES

In addition to those employed in industrial pursuits who were obliged to be insured, those who work at home, commercial travelers, chauffeurs of all kinds of vehicles and others are now included. The right of an employee to decide whether he or she wishes to be insured is now suppressed, that is, optional insurance no longer exists except for those in agricultural pursuits.

On the employer is placed the responsibility of sending to the caisses or primary collecting and disbursement offices his own premiums and those of his employees.

Every pay day the employer deducts 3.5 per cent of the salary of each employee and, having added an equal amount, the premium thus collected must be forwarded within ten days to the nearest postoffice.

Social insurance does not include industrial accidents and diseases. According to the older law, the insured could receive an indemnity only during the first six months of an illness, but this has been changed so that after the lapse of two months during which no indemnity is received, a new period begins so that indemnity can be given for a second six months if proof can be furnished that the insured is not cured, or the indemnity is granted until the termination of the illness irrespective of the duration of the same.

The *caisse* or bureau must be notified now within three instead of six days after the beginning of an illness, in the form of a letter attached to the physician's certificate thus greatly simplifying the former very complicated procedure.

The free choice of the medical attendant continues, thus differing from the system in some other countries in which only a physician appointed by the social insurance organization can treat a patient.

Great latitude is permitted in the way of prescribing drugs and apparatus, but attention is to be paid to using the less expensive of these.

No physician deals directly with the social insurance offices or caisses. He is paid by the patient who is allowed a certain sum for each day of illness, or in case of operation the sum allowed is proportionate to the character of the intervention. Before the insured worker can receive any money from the caisses or offices, his or her certificate must be signed by the attending physician or surgeon.

A fee table arranged by the syndicates or medical unions governs the charges of the medical attendant.

If an insured wishes to become a hospital patient he must enter an institution having a contract with the social insurance authorities. The patient must pay the difference between the price for hospital care demanded by the institution and the amount allowed by the caisses or insurance bureau. The latter allowance however can never be higher than the minimum fee paid by patients admitted to public hospitals. This amount is 10 francs (\$2.50) a day. If the insured prefers a hospital which has no contract he or she receives an indemnity equivalent to that received for illness at home.

This applies also to maternity cases. The insured must be willing to permit a physician appointed by the caisses or bureaux to verify the diagnosis and the like but this can be done only in the presence of the attending physician of the insured.

In case any prescription costs more than 25 francs (\$1.75) or any special treatment is needed, the medical inspector must give his approval.

RELATIONS BETWEEN PHYSICIANS AND SOCIAL INSURANCE AUTHORITIES

1 Medical service. The caisses, or insurance bureaux can make contracts with the medical syndicates or unions by which a fee table for services rendered to the insured is agreed on.

2 Hospitalization. Every public and private hospital can make contracts with the social insurance authorities according to which they care for the insured at an agreed daily rate. As stated previously, if an assured worker chooses to enter a hospital not having such a contract, he or she is allowed only a sum equal to that paid if he or she remained at their domiciles.

The caisses or insurance bureaux allow certain amounts for daily care and also for medical attendance if the insured is in a contract hospital.

LATER MODIFICATIONS PUBLISHED AUGUST 30 1936

1 Every French citizen, male or female, who works for one or more employers and earns less than 21,000 francs is obliged to become an insured according to the new law. (This annual sum was formerly lower, so that more workers are now included.)

2 If the insured cannot, after medical examination resume his or her work six days after the onset of an illness, he can be indemnified up to a period of six months. This indemnity cannot be below 3 francs nor more than 22 francs (\$1.50) per day.

Treatment of Acute Osteomyelitis of Adolescents

The question as to whether it is not better to operate on an acute osteomyelitis in adolescents at a late stage, when the process is well localized in the bone and the evidences of a generalized toxemia have subsided, was discussed at recent meetings of the Académie de chirurgie of Paris. The papers by Leveuf, who is an advocate of late operation, and of Sorrel and others, who opposed this point of view, have been referred to in previous letters.

The discussion was terminated at the June 17 meeting of the society by Leveuf himself. He stated that emergency operations on suppurative foci in general were being less often employed at present, and in place of this every effort is made to aid the resistance of the organism by nonoperative measures. The surgeon intervenes only when the pus is well localized but this does not mean that no operation at all is to be performed. To place an inflamed limb at rest in a plaster splint as advocated by Boppe, another Parisian surgeon, greatly aids in recovery.

One encounters cases of acute osteomyelitis termed the septicemic type, in which there is high fever, positive blood cultures and grave general symptoms, whereas the bone focus symptoms are minimal. No form of local treatment even amputation would be of any avail in such cases. Opposed to such hopeless cases, all other varieties are encountered in which it is impossible at the onset for the surgeon to ascertain the severity of the local infection. The operation must be one that is adapted to each individual case. It is still a debatable question as to whether an early trephining of the bone is of benefit or not. Certain recently published statistics would lead one to believe that it does more harm than good. Joint complications and secondary foci are observed twice as often after trephining as after simple incision of a subperiosteal abscess.

The operative indications in osteomyelitis are of two kinds (a) to evacuate a subperiosteal abscess and (b) to treat the bony focus. The former ought not to be opened too early, one can wait for one or two weeks without danger. With the aid of roentgenography the formation of a sequestrum can be easily ascertained and operation for its removal performed. There are other cases which are less favorable. The fever returns, the limb is swollen and roentgenography reveals extensive lesions. Here an extensive resection of the diaphysis is indicated according to Leveuf.

BERLIN

(From Our Regular Correspondent)

Aug 24, 1936

Heredity and Tuberculosis

Since ancient times it has been assumed that some etiologic factor based on heredity is present in tuberculosis. That view is justifiable. The heritability of a predisposition plays an important part in tuberculosis along with the danger of bacterial dissemination. This subject has been elaborated in Germany during the last few years. Münster, for example, on the basis of thoroughgoing famulial examinations, has formulated tables of relationship. He came to the conclusion that a predisposition, namely, a predisposed pulmonary weakness toward tuberculosis and other infectious diseases, does exist, that it is in fact inherited and in all probability subject to the law of recessive hereditary transmission and in any case is compatible with the laws of recessive hereditary descent. Ickert,

Likelihood that a Child Will Become Tuberculous

	Percentage of Probability
1 Both parents healthy and untainted	5.3
2 Both parents healthy siblings or grand siblings (of one spouse) tuberculous	6.0
3 Both parents healthy one parent of one spouse tuberculous	6.5
4 Both parents healthy one or more children already tuberculous	14.1
5 Both parents healthy one or more children already tuberculous siblings of the parents or parents of the spouses tuberculous	20.5
6 One parent tuberculous without further defect the other parent untainted	19.5
7 One parent tuberculous otherwise as in group 6 in addition other children already tuberculous	40.1
8 One parent tuberculous otherwise as in group 6 in addition siblings or grand siblings tuberculous	27.1
9 One parent tuberculous otherwise as in group 6 in addition one or both of this parent's parents tuberculous	39.1
10 Both parents tuberculous together with additional taint from either side	58.7

a well known research worker on tuberculosis, has come to the same conclusion. In collaboration with Benze he has investigated, by means of genealogical research the influence of tubercle bacilli and the individual human constitution on the tuberculous process. These authors assume that all tuberculous infection is ascribable to a heritable congenital predisposition, since practically every person who presents evidence of an established recessive hereditary transmission of this nature will become tuberculous. Nothing is stated however, as to what course the disease will take, since this is dependent on secondary endogenic and exogenic factors. Whereas Münster assumes a nonspecific predisposition (based on a lack of pulmonary resistance to infections), Professor von Verschuer believes, on the basis of research on tuberculous twins undertaken in collaboration with Diehl in the existence of a specific inherited predisposition toward tuberculosis. After observing the interrelation of the incidence of tuberculosis and environmental factors, von Verschuer and Diehl made the remarkable discovery that an identical behavior of tuberculosis cases pre-

senting extremely disparate environmental influences could be demonstrated only in enzygotic twins. Therefore, according to the sum of these observations, the hereditary predisposition is the crucial factor in the etiology of and subsequent course pursued by the tuberculosis.

Environmental influences are to be thought of also, but the eugenic factors are still important considerations in the campaign against tuberculosis. The German writers who have treated this subject find it desirable that persons with hereditary tendencies toward tuberculosis be restrained as far as is possible from contracting marriages. These writers are furthermore of the opinion that in any such case in which the prevention of offspring is unqualifiedly indicated the tuberculous person should be sterilized at his own request. The German legislation for prevention of hereditarily defective offspring should be extended so as to include persons who present progressive and advanced tuberculosis, those who present asocial and antisocial open tuberculosis, and any pair of tuberculous marriage partners. To judge the likelihood that a child of given parents will become tuberculous, Ickert and Benze have computed the accompanying "risk table."

Result of the Examination of Lupus Patients

During the year 1935, in the province of Thuringia, all persons known to be suffering from lupus and their relatives were subjected to a thorough examination. The result was recently published in the *Münchener medizinische Wochenschrift*. Since 456 patients were examined, the results are of particular interest. Of these 456 persons, 143 were men, 278 women and thirty-five children, thus, the number of women was nearly twice that of the men. The latter fact serves to corroborate previous statements with regard to a greater morbidity among females. The occupations most commonly represented by the patients were, among men, factory workers and laborers (twenty cases), artisans (twenty-three cases) and small independent tradesmen (thirty-two cases). There were, however, only one teacher and one waiter among the male patients. Of the women the vast majority (206 of 278) were housewives, young women living at home and domestic servants, next, at a great distance, followed factory workers (twenty-nine cases). The figures for other occupational groups were insignificant.

Of the 456 lupus patients, eighty presented tuberculous alterations of the lungs, this group was composed of thirty men, forty-four women and six children. Tuberculosis other than pulmonary was found in nine patients.

In addition, 651 relatives of the lupus sufferers were examined, sixty-eight of these presented pathologic tuberculous alterations of the lungs (including two cases of pneumoconiosis) or tuberculosis at some other site. Of the sixty-eight relatives fourteen were found to present open tuberculosis and in five of these cases the disease was detected for the first time by this examination, the other nine cases being previously known to the antituberculosis centers. The outcome of this examination suggests once more the need for roentgenologic pulmonary examinations of all lupus patients and their relatives.

Dental Caries in Prehistoric Man

Dental caries is discussed by M. H. Baege in an extensive treatise on the diseases of prehistoric man. To the men of the paleolithic age dental caries was still unknown. This refers to be sure, only to European relics of the Old Stone age. Paleolithic specimens in Africa show that dental caries had already appeared in that continent. The first European evidence that relates to the disease belongs to the mesolithic age. In the succeeding epoch dental caries seems to have increased steadily. In the neolithic period of Egypt dental caries appears still to have been a disease of rare occurrence. In later ages and especially during the period of Roman domination the incidence of the disease increased rapidly, however

From the material in hand to date it may be assumed that dental caries was still unknown to paleolithic man. The disease makes its initial appearance in the mesolithic age, occurring at first sporadically and then with ever greater frequency. By the close of the neolithic period the form of the caries approaches that of the modern disease. It may accordingly be said that the first appearance of dental caries coincides with the beginnings of human civilization. What has been said of caries is equally true of rachitis and is apparently likewise applicable to tuberculosis. With the exception of the men of the earliest paleolithic times, prehistoric man would seem according to the evidence not to have possessed that robust constitution which is popularly attributed to him.

VIENNA

(From Our Regular Correspondent)

Sept. 10, 1936.

Death of Prof. Julius Tandler

A few days ago the news reached Vienna that Prof. Dr. Julius Tandler, former director of the First Faculty of Anatomy in Vienna and former head of the local bureau of health, had died suddenly in Moscow. This news brought a sense of keen bereavement. His was an interesting career, not devoid of a certain element of tragedy. Born in the neighborhood of Vienna in the year 1869, the eldest of numerous children of a wretchedly poor family, Tandler attended the lower schools and the university in Vienna, graduating from the latter in 1895. He then immediately took up the study of anatomy, since three years previously he had been chosen by Professor Dr. Zuckerkanndl, the head of the Faculty of Anatomy, as a demonstrator. One year later he became assistant at this institution, by 1899 he was a docent. As Zuckerkanndl declined in health, Tandler who attained professional rank in 1903, came to substitute for him both as lecturer and as examiner. After Zuckerkanndl's death, Tandler was selected and appointed his successor *unco loco*. He remained at the head of the First Faculty of Anatomy from 1910 to 1933.

During this time the university repeatedly entrusted to him the highest posts of honor, then in 1919 he became under secretary of public health in the postwar Socialist ministry. In this capacity he rendered notable service. In 1920 he was appointed head of the city health department in Vienna and became reorganizer or, to put it more aptly, creator of a comprehensive public health system for the metropolis. Tandler's reputation as an anatomist was international. He was a distinguished teacher, brilliant lecturer and wit. His position afforded him abundant opportunity for scientific work and for the training of exceptional pupils. Tandler has enriched the science of anatomy with a vast amount of research. The following are only a few of his important contributions: a topographic anatomy of emergency operations that is indispensable to the practicing surgeon, fundamental work on the female pelvis in collaboration with Halban, elucidation of important gynecologic questions, work on the surgery of the brain in collaboration with Professor Ranzi, and work in the field of dental anatomy, in which he was assisted by Professor Sicher. In addition he became interested in the heart and published a notable work on cardiac embryology, and last but not least there is his great textbook of systematic anatomy. Tandler also edited the *Zeitschrift für Konstitutionslehre* in which the latest results of research on the endocrines were worked up. Well known too are his *Anatomy for Artists* and his studies of infantilism and of the effect of castration on the organism. In connection with his investigations of the last named topic he repeatedly frequented the sect of the Skoptzi in Russia.

As head of the Vienna bureau of health, Tandler established a whole group of standardized procedures that have been studied by specialists the world over and adopted by many municipalities. His principal concern as a public health official

was child welfare, since after the war there was a genuine danger of depopulation. Tandler organized a system of child welfare agencies that function in the interest of an individual infant even before birth. In Vienna welfare centers were set up for expectant mothers, for new-born infants and for nursing, the school children were kept under careful control by skilled physicians and nurses, school dental clinics were instituted as well as centers for examination of the eyes, and tuberculosis was attacked on a large scale by the construction of amazingly large numbers of sanitary, sunny dwellings. As a result of Tandler's initiative, Vienna came to possess some 50,000 sanitary dwellings that were rented to the poorer classes of the population. Sports and physical culture also found in Tandler an ardent advocate. His activities brought him into contact with questions of population policy, by which his destiny was further influenced. His success as an organizer of systematic public hygiene resulted in his being called to China to organize the public health activities there. This invitation he gladly accepted, since in Vienna he had had certain differences with his friends over questions of policy. He was not involved in the political revolution that took place in Austria in 1934, as he had been absent from Vienna since 1932 and he was completely exonerated when the legal proceedings against the socialist regime were instituted. In 1933 he was dismissed from his post of professor of anatomy. Thereafter he made his home in China, whence he was called to Russia, as he had been called to China, to organize the public health service. He also managed to interpolate extensive lecture tours in Russia, Japan and North America. In the midst of his activity this distinguished man was carried off by a heart attack.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1936

Physiology of Aviation at Great Altitudes

Prof. Carlo Foà, regular professor of physiology at Milan University, in a lecture recently delivered before the physicians of the army spoke on physiology of aviation at great altitudes. The resistance that the atmosphere offers to moving airplanes increases in proportion to the square of the speed of the machine. The studies made on physiology of aviation at great altitudes were preceded by studies on the life of men at the highest spots in the Alps. The methods used in these studies were those of Angelo Mosso and, more recently, those in which chambers for decompression of air are used. In these chambers it is possible to produce, by means of suction pumps, a progressive decompression of the air which corresponds to the different altitudes as the ship ascends.

Professor Herlitzka, instructor in physiology at Turin University, in his experimental studies on the subject, brought rarefaction of the air to a minimal pressure of 50 mm of mercury which corresponds to 19,000 meters above sea level. The figure is of importance because of the fact that above this altitude the alveoli of the lung are able to absorb no more gases than water vapor. In case of flying to such an altitude the body temperature would rise to such a height that the body fluids in contact with the atmosphere would boil. At an altitude of 10,000 meters above sea level the atmospheric pressure is reduced to one fourth the normal atmospheric pressure. A given weight of air at 10,000 meters above sea level occupies four times as much volume as it would occupy at sea level. Therefore the quantity of oxygen contained in a given volume of air at this altitude is much less than that which is needed for respiration. Aviators at this altitude should breathe oxygen from an artificial supply. With this purpose in view the speaker advises the use of apparatus for the self administration of oxygen that is, those with a closed circuit of the type of those which are now in use in the defense against war gases.

Professor Talenti of the Turin school found that the oxygenation of the blood in the lungs in breathing in an atmosphere of rarefied air is insufficient. When breathing is made under a pressure of 130 mm, which corresponds to 12,540 meters at sea level, it is diminished to two thirds in comparison with normal respiration. When respiration is made under a pressure of 115 mm, which corresponds to an altitude of 13,320 meters at sea level, the excitability of the nervous center of respiration is greatly lowered. It is necessary to recall frequently to the aviator his need of breathing oxygen, to which a small amount of carbon dioxide should be added. The speaker in his experiments with rarefied air reached a pressure of 107 mm of mercury, which corresponds to 14,000 meters at sea level. The Italian aviator Donati reached sometime ago an altitude of 14,433 meters at sea level, which corresponds to a pressure of 96.5 mm. He was breathing a mixture of oxygen and carbon dioxide while flying. The amount of oxygen in the lungs of aviators who reach an altitude of 14,433 meters is smaller than that which existed when death of the aviators in the *Zenith* and of the alpinists at Everest took place. According to the speaker, the reasons why Donati was able to resist such altitudes were that the period of time in flying was short and that the muscular work performed by the aviator was as minimal as possible, in comparison to that performed by the former researchers. Professor Herlitzka says that flying can be indefinitely prolonged if it is made up to an altitude of 12,000 meters above sea level, provided the aviator's respiratory apparatus is protected against the ambient air and the aviator breathes a mixture of oxygen and carbon dioxide. If aviation is performed in the stratosphere, that is, 16,000 meters above sea level, the aviator should be entirely isolated from the external ambient air either in an air-tight cabin or in individual apparatus. Such appliances, similar to those used in diving, are being developed in France, Spain and the United States.

Fracture of Neck of Femur

Professor Pieri, in a lecture recently delivered before the Società medica di Friuli, spoke on fractures of the femoral neck. He made a differentiation between fractures of the surgical neck of the femur and those of the anatomic neck of the femur and also between recent and old cases. Reduction of the wedge of the fracture followed by traction for two months is the preferable operation in fractures of the surgical neck (pretrochanteric fractures). Mobilization in old patients should be started, however, earlier than that. Curvilinear or oblique osteotomy is indicated in cases of long duration, not in old patients, in correcting the femoral deviation that usually remains under the form of coxa vara. In recent fractures of the anatomic neck, fibular nailing is indicated. In cases of long duration complicated by pseudarthrosis, it is advisable to reopen the fracture through an anterior incision, to make it bleed again, and then in the same operation to perform the fibular nailing.

Professor Devoto Is Dead

Prof. Luigi Devoto, a senator and the founder and first director of the Clinica del lavoro at Milan University, is dead. Professor Devoto graduated from Genoa University and was professor of medical pathology at Pavia University and director of Milan University. In both universities he established postgraduate courses in social and industrial diseases. He was surgeon general of the army during the war, founder of the journals *Il lavoro* and *La medicina del lavoro* and president of the Società italiana di medicina del lavoro and president of the clinical institutes for postgraduate work at Milan. Professor Devoto published important articles on lead and mercury chronic poisoning, pellagra and several diseases. He also wrote books on physiologic chemistry, immunology, clinical

medicine, semeiology and medical technics. He was a collaborator to the following books: "Trattato italiano di patologia e di terapia," "Trattato di diagnostica e terapeutica per medici e studenti" and "Trattato sulla tubercolosi."

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug 15, 1936

Uterine Hemorrhage in the New-Born

Dr. Barros Vianna, in a recent lecture before the Associação Paulista de Medicina, reported a case of uterine hemorrhage of two days' duration in a new-born infant. According to Halban, uterine hemorrhage in new-born infants is due to uterine changes caused by the presence of placental substances in the infant's blood. Jappert, in studies of such cases, found subepithelial hemorrhages with passage of blood into the uterus. Halban also, in studies of the internal genital organs of the infants who had not suffered from uterine hemorrhage, found uterine congestion and subepithelial hemorrhage. The uterine changes were not caused by ovarian secretions, because the ovaries in all cases were still in complete rest. Several of the hypotheses given to explain the uterine hemorrhage in infants cannot be supported. Ferraresi's hypothesis (stasis due to asphyxia) conflicts with the fact that cases of uterine hemorrhage have been observed even in infants delivered in cesarean section. That of Eroess (endometritis) is nullified by the results of Jappert's anatomopathologic studies of the uterus in that condition, in none of which was endometritis found. Schukowski's hypothesis (intestinal irritation causing congestion of the internal genitalia) is not correct because the conditions mentioned may coexist but there is no relation of cause and effect between them. Halban's theory of presence of placental substance in the infant's blood seems to be supported by the fact that Schlachte found hyperemia, hemorrhage and prostatic secretion in anatomopathologic studies on internal genitalia of new-born infants. Vianna pointed out the benign evolution of uterine hemorrhages in infants except in cases in which the hemorrhage is a symptom of septicemia or of hemorrhagic diathesis. He discussed the differential diagnosis of uterine hemorrhage in infants and said that infants suffering from the condition should not be given any treatment, not even vitamin C because of the fact that the hemorrhage disappears spontaneously in a few days.

Therapeutic Applications of Vitamin C

Dr. Vicente Baptista, in a recent lecture before the Associação Paulista de Medicina, said that Szent-Gyorgyi succeeded in isolating from certain plants and from the adrenals a substance that was identified as vitamin C (cevitamic acid). The substance can be chemically synthesized. It has oxidation-reduction properties and an action in controlling organic diseases. The speaker reviewed the work performed by Stepp and his school in the medical clinic of Munich with relation to the action of vitamin C in controlling diseases of the blood. He reviewed also the literature in which satisfactory results are reported from the use of vitamin C in the treatment of gynecologic hemorrhages. According to the speaker, the treatment with vitamin C is indicated in pigmentations of the skin, dinitrophenol toxic cataract, internal medicine and neuropsychiatric and pediatric diseases. The speaker reported satisfactory results from vitamin C in a case of hemophilia in his practice. Several vitamin C preparations ready for clinical use are in the market from some foreign countries. In São Paulo a vitamin C preparation will be in the market in the near future.

Histology of Leprous Neuritis

Dr. Vincente Grieco, in a recent lecture before the Sociedade de Leprologia of São Paulo, reported results of studies of cases of leprosy neuritis. He found in the trunks of the nerves alterations corresponding to tuberculous, pure nervous and

tubercloid forms of leprosy. The different types of neuritis that involve the trunks of the nerves are of an interstitial type. The granulomatous tissues first involve the nerve fiber and then cause its destruction. In tuberculous neuritis there is a great infiltration with presence of Virchow's vacuolized cells and of a large number of leprosy bacteria. In pure nervous neuritis there are few and small foci of infiltration containing lymphocytes. A consequent reaction of intense fibrosis with a process of calcification takes place. Leprosy bacteria are few. In neuritis of the tubercloid type the infiltration is made by epithelial cells, lymphocytes and giant cells. Frequently there are processes of caseification and calcification. Leprosy bacteria in the infiltration is rarely found in this form of neuritis. The types of neuritis caused by involvement of the fibers at the level of the cutaneous lesions show, as a rule, leprosy infiltration around the perineurium. Frequently the perineurium is entirely degenerated.

Marriages

- HOLLAND STEVENSON, Pelham, N. Y. to Miss Katherine Elizabeth Brady of New Rochelle, in Trout River, August 25.
DONALD MORRISON BALDWIN, Jacksonville, Fla., to Miss Rowena Virginia Mann of Lawrenceville, Ill., September 1.
ALLEN MARSTON BOYDEN, Portland, Ore., to Miss Margaret French Davis of Ann Arbor, Mich., September 19.
LOUIS DE ANGELIS to Miss Mae Carmela Cavalier, both of New Haven, Conn., in Richmond, Va., June 2.
COLUMBUS HERSEL BARNWELL, Asheville, N. C., to Miss Esther Ireland of La Fayette, Ill., September 19.
L. EDWARD GIOVINE, Woodside, N. Y., to Miss Anne Sheridan of East Elmhurst, L. I., New York, July 25.
ROBERT KEMPTON HARVEY, Kearney, N. J., to Miss Lydia Elizabeth Mesquita of Brooklyn, August 22.
WILLIAM JOSEPH DOYLE, Wilkes-Barre, Pa., to Miss Catherine Murray of Ashlev, September 3.
ROGER M. MINKEL, Swea City, Iowa, to Miss Dorothy Dusk of Iowa City in Fort Dodge, September 8.
STEPHEN J. DONOVAN, Detroit, to Miss Rachel Alice Greaves of Ann Arbor, Mich., September 7.
JOHN DUTTON STEELE, JR. to DR. BETSY SPRAGUE OWEN, both of Ann Arbor, Mich., July 2.
LAWRENCE T. MINISH, JR., Frankfort, Ky., to Miss Virginia Duncan of Greenville, June 13.
PAUL L. BOISVERT, Geneva, N. Y., to Miss Martha M. Hancock of St. Louis, September 19.
MAX LEOPOLD BRODNY, Boston, to Miss Jeannette Steinberg of Brookline, Mass., August 23.
ALEXANDER W. BLUMBERG to Miss Ruth Trietbohl, both of Williamsport, Pa., August 22.
GEORGE WIDENER KNADLER to Miss Caroline F. Feuchter, both of Philadelphia, recently.
FRANK MOORE McDONALD to Miss Ellene Sage Elderkin, both of Akron, Ohio, June 20.
FREDERIC G. PERRY, Plymouth, Ind., to Miss Sarah Ellen Gilworth of Warsaw, June 6.
ROY T. AGOSTINI, Old Forge, Pa., to Miss Mary Ann Adonizio of Pittsburg, June 25.
STERLING J. RITCHEY to Miss Josephine Johnson, both of Colfax, Iowa, September 21.
A. BURTON SMITH, Wyoming, Pa., to Miss Ida M. Parrish of Kingston, August 12.
VINCENT T. LATHBURY, JR., to Miss Faith C. Cony, both of Augusta, Maine, July 3.
NATHANIEL COPULSKY to Miss Edith Goldstein, both of Brooklyn, October 10.
JULIUS C. GOLDBERGER, New Orleans, to Miss Frances Renfeldt of Omaha, June 9.
HENRY TURKEL, Cleveland, to Miss Dorothy Goldberg of Detroit, recently.
ROY W. KEY to Miss Golda McLane, both of Sherman, Texas, June 20.
GRACE O. DOWNS to Mr. Dante Pierce, both of Des Moines, September 10.
DANIEL MYERS to Miss Nina Denny, both of Portland, Ore., July 4.

Deaths

John Winters Brannan, New York, Harvard University Medical School, Boston, 1878, member of the Medical Society of the State of New York and the Association of American Physicians, member and past president of the American Clinical and Climatological Association, consulting physician to the Bellevue Hospital, hospitals of the health department, Italian Hospital and Hospital for Ruptured and Crippled, president of the board of trustees of the Bellevue and Allied hospitals from 1902 to 1922 and also consulting physician, trustee of the New York Infirmary for Women and Children aged 83, died August 30, in the New York Polyclinic Medical School and Hospital, of heart disease and arteriosclerosis

Frederick Smith Baird, Bay City, Mich., McGill University Faculty of Medicine, Montreal, Que., Canada, 1913 member of the Michigan State Medical Society and at one time counselor of the tenth district past president and secretary of the Bay Arenac-Gladwin-Iosco Counties Medical Society served during the World War, on the staff of the Mercy Hospital, aged 48, died, August 2, of coronary thrombosis and myocarditis

Edwin Clinton Anderson, Chattanooga, Tenn. Eclectic Medical Institute, Cincinnati 1880, Chattanooga Medical College, 1897, member of the Tennessee State Medical Association, past president of the East Tennessee Medical Association for nine years held the chair of professor of pathology at the Chattanooga Medical College, aged 78, for many years on the staff of the Erlanger Hospital, where he died August 14

Clarence Woldemar Wille * Lakewood Ohio University of Pennsylvania Department of Medicine Philadelphia, 1897, entered the U S Public Health Service and for ten years was assistant surgeon in various federal hospitals formerly chief of the U S Marine Hospital, Cleveland, on the staff of the Lakewood City Hospital and consultant in surgery to the Veterans Administration, aged 62, died suddenly, July 1

William Joseph Birkofer * Gothenburg, Neb., State University of Iowa College of Medicine Iowa City 1897 member of the House of Delegates of the American Medical Association in 1910 formerly mayor of Gothenburg at one time vice president of the Nebraska State Medical Association and secretary of the Dawson County Medical Society aged 64, died, August 15, of diabetes mellitus and gangrene

Richard Goodwin Wadsworth * Boston Harvard University Medical School, Boston 1900 member of the New England Obstetrical and Gynecological Society fellow of the American College of Surgeons, for many years a member of the staff of the Free Hospital for Women, Brookline secretary-treasurer of the Boston Medical Library, aged 62, died, July 4, at his summer home in Wareham, of thrombosis

Willie Needham Blount, Laurel, Miss. Louisville (Ky.) Medical College, 1894 member of the Mississippi State Medical Association, served during the World War on the staff of the Laurel General Hospital, chief surgeon of the Gulf Mobile and Northern Railroad Company aged 63 died August 27, in the Touro Infirmary at New Orleans

William Henry Burmeister * Chicago University of Michigan Department of Medicine, Ann Arbor 1907 served during the World War, formerly assistant professor of pathology at the University of Illinois College of Medicine, on the staff of St Joseph's Hospital, aged 54, died August 11, at his summer home in McHenry

H Max Mehlig, Bellingham, Wash. Central College of Physicians and Surgeons, Indianapolis 1897 member of the Washington State Medical Association and the Associated Anesthetists of the United States and Canada for many years county coroner secretary of the staff of St Joseph's Hospital aged 62 died July 18

Curtis Boyd Munger * Medical Director Captain U S Navy Newport, R I Cooper Medical College San Francisco 1903 fellow of the American College of Surgeons entered the navy in 1905 aged 57 commanding officer of the United States Naval Hospital, where he died October 3 of cerebral hemorrhage

Robert Fritchey Roth, Westmont N J Hahnemann Medical College and Hospital of Philadelphia 1927 member of the Medical Society of New Jersey aged 33 died July 29 in the West New Jersey Homeopathic Hospital Camden of chronic appendicitis partial intestinal obstruction and incisional hernia

Frederic Elmer Jenkins, Lake Como Fla. Bellevue Hospital Medical College, New York, 1885 at various times served in the medical corps of the national guard and reserve corps of the U S Army, served during the World War, aged 73, died, July 1, of bronchiectasis and nephritis

Frank Butler Evans, Sandpoint, Idaho Northwestern University Medical School, Chicago 1904, formerly member of the state legislature of Nebraska and the senate of Idaho county physician and member of the school board, aged 55, died, July 22, in Portland, Ore., of heart disease

Meriwether Lewis Anderson, Richmond, Va., Medical College of Virginia, Richmond 1900, member of the Medical Society of Virginia, at one time demonstrator of obstetrics at his alma mater, served during the World War, aged 63, died, August 4 in St Luke's Hospital

Frederick William Hamlin, Rochester, N Y., New York Homeopathic Medical College and Hospital, 1888, at one time professor of obstetrics at his alma mater, formerly on the staff of the Flower Hospital, New York, aged 74, died, July 19 of chronic interstitial nephritis

William Henry Barr * Philadelphia Jefferson Medical College of Philadelphia, 1906 fellow of the American College of Surgeons formerly chief surgeon of the Ashland (Pa.) State Hospital, aged 56, died, August 15, in Ocean City N J, of coronary sclerosis

Richard M Boyd * Aberdeen, Miss., Memphis (Tenn.) Hospital Medical College, 1902 served during the World War on the staff of the Aberdeen Hospital aged 60 died, August 23, in the George Washington Hospital, Washington, D C, of cerebral hemorrhage

John R Baldwin, Greenville Miss (licensed in Mississippi in 1904), member of the Mississippi State Medical Association, formerly city and county physician, aged 55, died, August 5, in the King's Daughters' Hospital, of chronic nephritis and myocarditis

Fred Lyle Patterson, Coraopolis Pa., Jefferson Medical College of Philadelphia, 1907 member of the Medical Society of the State of Pennsylvania aged 54 died, July 9, in the Ohio Valley General Hospital, McKees Rocks, of chronic endocarditis

Samuel Ayres * Kansas City, Mo., University of Louisville (Ky.) Medical Department, 1883 chief surgeon of the Kansas City Southern Railway, on the staff of St Mary's Hospital aged 78, died, August 7, in Rochester, Minn., of pneumonia

John Gerald Byrne, Seattle, Northwestern University Medical School, Chicago, 1894, member of the Washington State Medical Association served during the Spanish-American and World wars, aged 65, died August 28, in the Providence Hospital

Melvin G Yocum, Mentone, Ind. Eclectic Medical Institute, Cincinnati 1890 member of the Indiana State Medical Association, past president of the Kosciusko County Medical Society, aged 70, died, July 7, of arteriosclerosis and diabetes mellitus

James Livingstone Tower, Albany, N Y Queen's University Faculty of Medicine, Kingston, Ont. Canada, 1913 member of the American Psychiatric Association aged 45 died, July 10, of hypertensive heart disease and cerebral edema

Arch Edward Baldwin, Seattle M B University of Minnesota Medical School, Minneapolis, 1924 member of the Washington State Medical Association aged 42 died, August 8, in the Providence Hospital of Addison's disease

Henry Braunlich * Davenport Iowa University of the City of New York Medical Department, 1883, aged 76, formerly on the staff of the Mercy Hospital where he died August 10, of uremia and hypertrophied prostate

Truss Malcolm Brister * Bogalusa, La., Memphis (Tenn.) Hospital Medical College 1907 served during the World War aged 54 on the staff of the Elizabeth Sullivan Memorial Hospital, where he died August 22

Charles A Blair, Morenci Mich. Michigan College of Medicine and Surgery, Detroit 1892 member of the Michigan State Medical Society aged 77 died, August 4, in Hollywood, Calif. of carcinoma of the abdominal viscera

John Reynolds Patton, Boston University of Vermont College of Medicine Burlington 1897, connected with the Veterans Administration aged 60 died July 28 in the New England Baptist Hospital of lobar pneumonia

Elmer E Ash * Goshen, Ind. Kentucky School of Medicine Louisville 1885 past president of the Elkhart County Medical Society aged 73 died August 16 of carcinoma of the sigmoid and diabetes mellitus

George Edgar Williams, Valdeese, N C State University of Iowa College of Medicine Iowa City, 1897, served during the World War, aged 62, died, July 29, in Washington, D C., following an operation for carcinoma.

Arthur Henry Boyden Worcester, Mass Tufts College Medical School, Boston, 1909 fellow of the American College of Surgeons, on the staff of the Worcester City Hospital, aged 56, died, August 23

Octavius Manlius Spencer, Chicago, Vanderbilt University School of Medicine, Nashville Tenn, 1915, formerly a surgeon in the U S Public Health Service, aged 43, died, July 13, of heart disease

Theodore Davis Adlerman, Brooklyn, Eclectic Medical College of the City of New York, 1892, on the staff of the Cumberland Hospital aged 66, died, August 15 in Honolulu, Hawaii, of myocarditis

Helen Genevieve Colby Bond, Concordia, Kan , Kansas City (Mo) Hahnemann Medical College 1904 member of the Kansas Medical Society, aged 64, died, August 23, of carcinoma of the breast.

Perry Grant Ingersoll, Dunlap, Iowa State University of Iowa College of Homeopathic Medicine, Iowa City, 1905, aged 52, died, July 10, in Omaha, Neb, of paralytic ileus and diabetes mellitus

Julius S Newland, San Diego, Calif , Eclectic Medical Institute Cincinnati, 1892, aged 91, died, July 2, in the San Diego County Hospital, of chronic myocarditis and cerebral hemorrhage

Henry W Vanderhoof, Colorado Springs, Colo Bennett College of Eclectic Medicine and Surgery, Chicago, 1874 Chicago Medical College, 1885, aged 86, died, July 21, of pneumonia

Guy Collins Anderson, Eads, Tenn , Memphis Hospital Medical College 1902, served during the World War, aged 56 died, August 21, in the Veterans Administration Facility, Memphis

Alpheus Eli Adams, Newburgh, N Y College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879 aged 79, died, July 16, of carcinoma of the prostate.

William A. Burkhalter, Greenwood Miss Tulane University of Louisiana Medical Department New Orleans, 1889, aged 70, died, August 30, of bronchopneumonia and bronchiectasis

Abraham Burack, Brockton Mass , Tufts College Medical School, Boston 1912 member of the Massachusetts Medical Society, aged 46, died, August 23, at the Beth Israel Hospital

Horace Van Nort, St Louis, St Louis Medical College, 1883, formerly a druggist, aged 80 died, July 11, in the St. Louis City Sanitarium, of heat prostration and arteriosclerosis

Howard Jerome Goodrich, Delhi N Y College of Physicians and Surgeons Medical Department of Columbia College New York, 1894 aged 66, died July 7, of paralysis agitans

John E Anderson Neshanic Station N J College of Physicians and Surgeons, Baltimore, 1884 aged 74, died August 15, of arteriosclerosis and Buerger's disease.

Alonzo Wells Daniel, Nashville Tenn., Vanderbilt University School of Medicine Nashville 1936, aged 24, died suddenly, August 14, of a self-inflicted bullet wound

J J O'Neill, Oshkosh Wis Northwestern University Medical School Chicago, 1895, aged 65 died July 31 in the Mercy Hospital, of adenocarcinoma of the prostate.

Mary Parker Hopkins Brandrup, Mankato Minn University of Minnesota Medical School Minneapolis, 1901 aged 65, died August 23, of carcinoma of the sigmoid.

Thomas Nathaniel Willis, Louisville Ky Hospital College of Medicine Louisville, 1878, aged 81 died July 16, in Floyd Knobs Ind., of myocarditis and nephritis

Salvatore Auriemma Weehawken, N J Regia Università di Napoli Facoltà di Medicina e Chirurgia Ital., 1908, aged 56 died August 14 of arteriosclerosis

Albert T Baker, Retsil Wash State University of Iowa College of Medicine Iowa City 1877 Civil War veteran, aged 89 died July 10 of chronic nephritis

Samuel Lancaster Pottinger, Louisville, Ky University of Louisville Medical Department, 1894, aged 66 was found dead in bed July 15 of heat exhaustion.

Henry R. McMullan, Roane Texas (registered by Texas State Board of Medical Examiners under the Act of 1907) aged 62 died in July of myocarditis

James Fuller Miller, Pocatello, Idaho, Tennessee Medical College, Knoxville, 1901, served during the World War aged 59, died, July 18, of arteriosclerosis

William Henry Baugh, Shoshone Idaho, Missouri Medical College, St Louis, 1891, aged 72, died, August 4 of diabetes mellitus and arteriosclerosis

Jerome E McLaughlin, Winchester, Idaho, University of Minnesota Medical School, Minneapolis, 1906, aged 60 died, July 20 of cerebral hemorrhage

Edwin Everett Dougherty Los Angeles, Indiana University School of Medicine, Indianapolis, 1910, aged 60, died, July 17, of chronic myocarditis

Wilson Jesse Woodruff, Wapello, Iowa, College of Physicians and Surgeons, Keokuk, Iowa, 1885, aged 77, died July 22, of carcinoma of the kidney

Walter Barnett Wallace, Detroit, Detroit College of Medicine, 1895, aged 68, died suddenly, July 20, in St. Luke's Hospital, of cerebral hemorrhage

Shigemitsu Itami, Philadelphia Medical Faculty of the Osaka Imperial University, Osaka, Japan, 1897, aged 59 died, July 5, in Marblehead, Mass

Harrison Bonham Hulse, Los Angeles Indiana University School of Medicine, Indianapolis, 1912 aged 47 died, July 17, of cyanide poisoning

Howard Allen, New Egypt, N J College of Physicians and Surgeons, Baltimore 1889 aged 70 died August 22, of uremia and diabetes mellitus

Benjamin F Whittinghill, Du Bois Ind. (licensed in Indiana in 1897), aged 91, died, July 5, of cardiorenal disease and fracture of the femur

Adelaide Marklew Underwood, Pierson Fla Woman's Medical College of Pennsylvania, Philadelphia, 1890, aged 87, died, July 14, of nephritis

William Alfred Phillips, Paso Robles, Calif , Western Reserve University Medical Department, Cleveland, 1880, aged 75, died, July 2

Charles Ramage, Long Beach Calif University of Edinburgh Faculty of Medicine, Scotland, 1887, aged 70 died, July 4, of tuberculosis

Howard Higgins Hopkins, Fresno Calif Cooper Medical College, San Francisco, 1904, aged 60, died, July 13 of cerebral hemorrhage

Nicholas A J Urbanski, Buffalo College of Physicians and Surgeons, Baltimore 1910, aged 49, died July 18 of coronary thrombosis

Albert Mayfield Allen, Whitmire, S C , Southern Medical College, Atlanta, 1892, aged 69, died August 24 of cardiovascular disease

Frances E Clarke Westergren, Boston, Boston University School of Medicine, 1892, aged 74, died July 8 of coronary sclerosis

James Halliday Williams, Cincinnati, Medical College of Ohio Cincinnati 1900, aged 59, died suddenly July 12 of heart disease

Hobart B Steward Coolidge Ariz St. Louis University School of Medicine, 1927, aged 37 died July 3, in Compton, Calif

Jack Smiley, Salem Va Medical College of Virginia, Richmond, 1926, aged 34, died, July 3 in a hospital at Roanoke.

Alexander Hotson, Park Hill, Ont Canada Western University Faculty of Medicine London, 1889 aged 91, died, July 21

George M Glasgow, Cassville Pa Jefferson Medical College of Philadelphia, 1891 aged 70, died, July 24 of aneurysm pectoris

John Madison Hall, Hazlehurst Ga Southern Medical College, Atlanta 1895 aged 60 died July 25 of nephritis

Charles Edward Keeler, Elderton Pa Baltimore Medical College 1897 aged 67 died July 6 of acute endocarditis

William Phillip Schirding, Palatine Ill Rush Medical College Chicago 1894, aged 64 died suddenly, July 11

Joseph L Bell, Berkeley Calif University of Louisville (Ky) Medical Department, 1897 aged 66 died July 1

Alvin Judson Hurt, Chester Va Chattanooga (Tenn) Medical College, 1893 aged 72 died July 22

Helen Weyant, Toledo Ohio (licensed in Ohio in 1914) aged 92 died, July 12

Bureau of Investigation

BERNER'S TABLETS

A Reducing Nostrum Declared Fraudulent by the United States Postal Authorities

The Postmaster General has declared, on evidence satisfactory to him, the Re-Duso Sales Company Berner Sales, Berner's Tablets, and their officers and agents as such at St. Louis engaged in conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises. By the authority vested in him, he closed the United States mails to these concerns and parties on July 8, 1936.

Carl Berner started the "Re-Duso" and "Berner's Tablets" business for the alleged treatment of obesity in December 1934 and was the sole owner. Re-Duso and Berner's Tablets were sold through newspaper solicitation, the copy being typical of the patter used by the exploiters of the obese. One of these advertisements reads as follows:

"REDUCE!"

SAFELY—no diet or exercise—no strong laxatives—try this modern method of losing weight without injuring your health—Berner's Tablets, 3450 Texas Grand 9057. We deliver

The overweight person who "fell for" the bait and communicated with Berner received a printed sheet headed "Berner's Tablets," describing the treatment, which read in part:

Berner's Tablets are a small chocolate-coated tablet about the size of an aspirin. They are safe—yet very effective.

Berner's Tablets eliminate excess fat by reducing the appetite and giving a very gentle and mild laxative action causing the most natural elimination of excess fat and waste matter accumulated in the system. Berner's Tablets simply offer you an economical way to do what modern doctors do in the treatment of obesity.

No physicians, chemists or pharmacists were connected with the business, and Berner, the promoter, had no medical training, yet the advertising copy as set forth implied that "modern doctors" were in full accord with the Berner obesity fraud.

Post Office officials stated that chemical analysis of the "chocolate-coated tablets" revealed them to consist essentially of boric acid and cascara.

Such a preparation, when used as directed, would not reduce the weight of the user unless it did so by irritating and upsetting the normal digestive functions. Obesity is due to various causes, of which overeating and lack of exercise are not inconsequential factors. A person accustomed to overindulgence in food would not experience a sudden strengthening of will power by thrice daily swallowing a combination of boric acid and cascara.

In addition to the boric acid and cascara tablets the promoter also furnished on request another preparation known as the "Little White Tablet," which contained, according to the postal officials, ½ grain of thyroid extract. The Little White Tablet was not a part of Berner's regular treatment but was a special concession to the purchasers of Berner's Tablets.

Prospective purchasers of obesity nostrums would do well to beware of all advertised remedies claiming to be harmless and requiring "no diet or exercise." If a preparation is harmless it is ineffective, and if it is powerful enough to cause reduction of body weight regardless of diet or exercise it must do so at the expense of health. Periodicals that carry obesity advertisements such as those for Berner's Tablets take an unfair advantage of reader confidence.

"THERMALAID"

In THE JOURNAL for October 3 appeared an article relative to "Thermalaid" in which it was pointed out that the *Kiwanis Magazine* was one of the publications in which the advertisement for this product had appeared "during the past few years." The secretary of the Kiwanis International writes to point out that the last time any advertising of this company appeared in *Kiwanis Magazine* was in March 1931 over five years ago. Since that date, *Kiwanis Magazine* has not accepted any advertising of this or similar character. THE JOURNAL regrets to

have given the impression that *Kiwanis Magazine* is now carrying such advertising and wishes to congratulate the publishers on having adopted suitable censorship of medical advertising material.—Ed

PRINTER ASSUMES RESPONSIBILITY FOR ERROR IN KOCH PAMPHLET

A letter received from Mr. Hugh A. Kaumeier of the Sales Department of the American Printing Company, Detroit, states that the illustrations criticized in the article on William F. Koch (THE JOURNAL, Aug. 15, 1936) appeared as they did because of a printer's error for which his company assumes the responsibility. He states furthermore that Dr. Koch did not see a proof of the second run of this folder and left the proofreading to the printer.

Correspondence

INJECTION OF SUPRA-ORBITAL NERVE

To the Editor—Francis C. Grant (THE JOURNAL, September 5, p. 772), in describing the technic for injection of the supra-orbital nerve, states that "the nasal branch is often difficult to block, for it may divide from the main trunk of the supra-orbital well within the bony canal."

Seeing that the supra-orbital nerve does not give off a nasal branch, I presume that the author is referring to the other division of the frontal nerve, the supra-trochlear, which does send a branch to the root of the nose and communicates with the infratrochlear branch of the nasal nerve. The supra-trochlear nerve could be reached (in supra-orbital block) only when the alcohol suffuses or is forced back to the parent stem—the frontal branch of the ophthalmic—which procedure, just as in the case of a too deep injection of the infra-orbital nerve, might damage some of the contents of the orbit, the cavity of which is traversed by both nerves—the frontal with its two branches, and the infra-orbital.

PENN G. SKILLERN, M.D., South Bend, Ind.

HEREDITARY RESISTANCE TO TUBERCULOSIS

To the Editor—In THE JOURNAL, August 15, page 471, Miller and Rappaport have elaborated on the theory of inherited resistance to tuberculosis in a manner difficult to accept. Of course it is well known that in this country the mortality from tuberculosis varies greatly among certain race groups, being high among the colored races, particularly the Negro, and relatively low among Jews and Italians. It is also well known that the mortality is unusually high in isolated race groups, such as South Sea islanders that have come for the first time in contact with tuberculous infection. It would thus appear that those races which have been in contact with civilization and its concomitant tuberculosis over the longest period of time would be more resistant to the disease. The authors, in explaining how this hereditary resistance is brought about, say that the resistance "has thus become progressively increased by the addition of acquired resistance through successive generations." This argument for the inheritance of acquired characteristics is a biologic concept always difficult to accept and the authors themselves admit, would meet with prejudice.

To me, the most plausible concept has been the "survival of the fittest," and this is equally applicable to other diseases as well as to tuberculosis. It is common knowledge that isolated racial groups such as native Africans and Eskimos have in a short time died off in large numbers on first coming into contact with an infectious disease such as measles or tuberculosis. The survivors in these groups, who may be considered from this standpoint the fittest, represent the resistant remnant that lived to transmit to later generations their resis-

tance to the particular infection. The "survival of the fittest" theory may in the same way apply to other diseases such as syphilis, which is today far less virulent than it was during the sixteenth century.

The importance of the hereditary factor in allergy seems least impressive. In large urban populations there are just as many Negro as white children reacting to the tuberculin test, despite the fact that the mortality is from three to five times as great among the Negroes. This would suggest that the allergy is just as prevalent in the less resistant as in the more resistant group. In spite of the many arguments against hereditary resistance to tuberculosis, ample experimental evidence exists that animals such as turtles and rats are very resistant to the human tubercle bacillus. And, as was mentioned, the resistance of race groups to tuberculosis is also well known. The hereditary and constitutional factors contributing to this resistance remain a mystery. Some light is beginning to be shed in this direction by investigations of the relationship of the adrenal cortex and the spleen in the resistance to bacterial and other intoxications.

JULIUS KAUNITZ, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HAY FEVER DUE TO RAGWEED SENSITIVITY

To the Editor—I have a patient who, during the second week of August developed for the first time typical seasonal attacks of hay fever and asthma. The attacks of asthma which are more severe at night are relieved only by epinephrine hypodermically, which has to be administered about every three hours in doses of from 0.3 to 0.4 mg. Tests for allergy have resulted in. For pollens: orchard grass 2 plus wormwood 3 plus June grass 2 plus timothy 2 plus red top 2 plus Bermuda 3 plus pigweed 2 plus ragweed (short) 3 plus ragweed (giant) 3 plus goldenrod 1 plus English plantain 1 plus lambs quarters 1 plus marsh elder 1 plus. For epidermals: rabbit 1 plus dog 1 plus. For inhalants: house dust 1 plus pyrethrum 2 plus tobacco 1 plus kapok 1 plus. For foods: pork 1 plus egg white 1 plus minus egg yolk 1 plus beet 1 plus spinach 1 plus barley 1 plus wheat 1 plus minus apple 1 plus pear 1 plus cherry 1 plus hops 1 plus kidney bean 1 plus peanut 1 plus minus string bean 1 plus pike 1 plus tomato 1 plus minus okra 1 plus halibut 1 plus. The history and the physical examinations of the patient who is a young man are essentially negative. The nasal passages and sinuses are normal except for the characteristic hay fever appearance of the nasal mucosa. The routine laboratory tests (urine, blood count, blood Wassermann and blood sugar) do not reveal any abnormal condition. Though the patient is allergic to several pollens the ragweeds (short and giant) evidently represent the main factor at least as far as the present seasonal condition is concerned. In planning a treatment, however, the sensitiveness of the patient to the late spring pollens has to be considered as a potential menace for future manifestations. I realize that in relation to the present season owing to its lateness there is very little to be expected from any desensitization procedure and I am principally concerned with a plan of prevention for the next year. Under this respect your suggestions would be very much appreciated. By considering the severity of the case, are you in favor of a perennial treatment? For how long should that be safely carried on? Would it be advisable (1) to start with a ragweed mixture and then shift to a spring and fall mixture? (2) to begin with a mixture of the several pollens and to which the patient is allergic and to continue with it? (3) or to start with a mixture of the several pollens and to shift next spring to a ragweed mixture? The doubt in my mind is that treatment with a mixture of the several pollens to which the patient is sensitive would not result in the patient's getting enough of the ragweed extracts to be desensitized against the ragweed pollens responsible for the present clinical syndrome. Of course the allergy of the patient to the epidermals and foods is also to be taken into account especially during the season for the purpose of eliminating all the possible contributing or aggravating elements. Please omit name.

M.D. Ohio

ANSWER.—The main point in this case is that the patient's asthma and hay fever are almost certainly due to the pollens of short and giant ragweeds. Ragweeds pollinate in the Cleveland vicinity from about August 10 or 15 to approximately the end of September. As the season is over there is no reason for

further treatment this year, but for next year a definite plan of injections should be carried out. These may be started as late as May 1 but it would probably be better to begin about April 1.

Injections may be given about twice a week for a total of from twenty-five to thirty injections. The mixed ragweed extract should be purchased in bulk so that the dosages may be adjusted to suit the sensitivity of the patient. The strength of the injections should be increased from 35 to 50 per cent each time, if possible, until the hay fever season has started, and then reduced slightly, at the end of the season the top dose should be repeated every two weeks (perennial method of treatment) and gradually increased before the next season.

Regarding the other pollens (especially grasses) that gave positive skin tests, it is advisable to disregard them entirely until and unless symptoms develop during the grass hay fever season (about May 25 to the end of July), treatment for positive skin tests should never be given unless clinical symptoms occur. The patient has a "potential" grass hay fever. "Potential" cases should be watched, not treated. The foods that gave positive tests should be avoided during the ragweed season and contact with animals should also be restricted at this time.

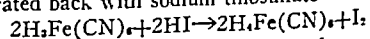
The question as to how long perennial treatment is necessary cannot be answered. It will depend on the patient. One who has only hay fever may take injections for three or four years perhaps, and then stop for a year or more if symptoms are absent or slight, but if asthma also is present the injections should not be stopped so soon. The patient should be tested each year for ragweed pollens, when and if the skin tests become negative for these, the sensitivity is presumably much lessened or perhaps gone entirely.

HAGEDORN-JENSEN METHOD FOR DETERMINING BLOOD SUGAR

To the Editor—Please describe the method of blood sugar determination by the Hagedorn-Jensen method.

T. K. LEWIS, M.D., Birmingham, Ala.

ANSWER.—The Hagedorn-Jensen method of blood sugar determination requires only 0.1 cc. of blood from the finger or lobe of the ear. A protein-free filtrate is obtained by using a colloidal solution of zinc hydroxide. The clear filtrate is treated with potassium ferricyanide, the unconsumed portion of which is titrated back with sodium thiosulfate. The reaction is



The ferricyanide is precipitated in the form of a zinc compound. All reagents must be free of iron.

For getting the filtrate: 1. Zinc sulfate 0.45 per cent solution to be made each week. Prepare a stock 45 per cent solution by adding 45 gm. of sulfate to enough distilled water to make 100 cc. of solution. Add 1 cc. of this solution to about 75 cc. of distilled water in a 100 cc. volumetric flask, then dilute to 100 cc. 2. Tenth normal sodium hydroxide solution. Dilute 10 cc. of normal sodium hydroxide to 100 cc. with distilled water. This solution must be made each week.

For sugar determination: 1. Potassium ferricyanide solution. Dissolve 1.65 gm. of potassium ferricyanide (recrystallized) and 10 gm. of anhydrous sodium carbonate in about 800 cc. of distilled water in a 1000 cc. volumetric flask, dilute to 1000 cc. with distilled water. Keep in a brown bottle. 2. Zinc sulfate solution. Dissolve 10 gm. of zinc sulfate and 50 gm. of sodium chloride in enough distilled water to make a total of 160 cc. 3. Potassium iodide solution. 12.5 per cent. Dissolve 12.5 gm. of potassium iodide in about 75 cc. of distilled water in a 100 cc. volumetric flask and dilute to 100 cc. with distilled water. Keep in a brown bottle. To use solutions 2 and 3 add 40 cc. of solution 1 to 10 cc. of solution 3. Make this mixture at least once a week. 4. Acetic acid solution. 3 per cent. Add 3 cc. of glacial acetic acid to about 75 cc. of distilled water and dilute to 100 cc. in a volumetric flask. 5. Starch solution. 1 per cent. Add 1 gm. of soluble starch to 5 cc. of distilled water and heat slightly. Dilute to 100 cc. with saturated solution of sodium chloride. 6. Two hundredth normal solution of sodium thiosulfate. This may be made by adding 5 cc. of tenth normal sodium thiosulfate to enough distilled water to make 100 cc. or by dissolving 0.7 gm. of sodium thiosulfate in 500 cc. of distilled water. 7. To make starch solution solution of potassium iodide. Place 0.3567 gm. of potassium iodide in a 2000 cc. volumetric flask, dissolve in a few cubic centimeters of distilled water and dilute to 2000 cc. This is used for the titration of the two-hundredth normal sodium thiosulfate. Every new titration must be titrated and the titration repeated at least once a week. To titrate the thiosulfate solution: Mix 2 cc. of potassium ferricyanide solution with 2 cc. of 3 per cent acetic acid (4) and 2 cc. of the mixture of solutions 2 and 3 and 2 drops of starch solution (5). This is the solution 6 until all traces of blue have disappeared. Divide the number of cubic centimeters of solution 6 used to obtain the titer of the solution. Example: Assume 2.04 cc. of solution 6 was used divided by 2.04 equals 0.98 the titer.

The following apparatus is needed:
One automatic 2 cc. pipet mounted on the neck bottle
One 0.1 cc. pipet

One 2 cc volumetric pipet.
One 3 cc. volumetric pipet.
One automatic microburet, 2 cc. graduated in 0.02 cc mounted on a bottle

Test tubes, 15 by 150 mm.
Test tubes 30 by 90 mm
Copper racks for test tubes for immersion in water bath
Glass funnel 4 cm in diameter

Technic of test Place in a test tube 15 by 150 mm 1 cc of tenth normal sodium hydroxide solution and 5 cc of 0.45 per cent solution of zinc sulfate Add 0.1 cc of blood from the finger or lobe of the ear Rinse the blood pipet twice with the fluid in the test tube. Immerse the test tube in boiling water for three minutes

Prepare a test tube 30 by 90 mm with a 4 cm funnel in which is placed a layer of moistened fat free absorbent cotton Filter the coagulum in the first test tube through the cotton The filtrate is clear Rinse the first test tube with 3 cc of distilled water and filter Rinse a second time with 3 cc of water and add to the filtrate Allow all the solution to drip through Add to the filtrate 2 cc. of solution 1 (potassium ferri cyanide) Measure accurately Place in a bath of boiling water for fifteen minutes Allow to cool Add 3 cc of a mixture of solutions 2 and 3 and 2 cc of solution 4 (3 per cent acetic acid) and 2 drops of solution 5 (starch) Titrate against two-hundredth normal sodium thiosulfate (solution 6) At the same time carry out a blank test without the addition of blood Determine the number of cubic centimeters of sodium thiosulfate used in the actual test as well as in the blank titration Multiply this by the titer of the solution From the table given below ascertain the actual sugar value Subtract the figure of the blank test from that of the actual test The difference represents the milligrams of sugar in 100 cc of blood

Table for Determining Blood Sugar

Cc N/200 thiosulfate = mg of dextrose in 100 cc of blood		0	1	2	3	4	5	6	7	8	9
0.0	385	382	379	376	373	370	367	364	361	358	
0.1	355	352	350	348	345	343	341	338	336	333	
0.2	331	329	327	325	323	321	318	316	314	312	
0.3	310	308	306	304	302	300	298	296	294	292	
0.4	290	288	286	284	282	278	278	276	274	272	
0.5	270	268	266	264	262	260	259	257	255	253	
0.6	251	249	247	245	243	241	240	238	236	234	
0.7	232	230	228	226	224	222	221	219	217	215	
0.8	213	211	209	208	206	204	202	200	199	197	
0.9	195	193	191	190	188	186	184	182	181	179	
1.0	177	175	173	172	170	168	166	164	163	161	
1.1	159	157	155	154	152	150	148	146	145	143	
1.2	141	139	138	136	134	132	131	129	127	125	
1.3	124	122	120	119	117	115	113	111	110	108	
1.4	106	104	102	101	099	097	095	093	092	090	
1.5	088	086	084	083	081	079	077	075	074	072	
1.6	070	068	066	065	063	061	059	057	056	054	
1.7	052	050	048	047	045	043	041	039	038	036	
1.8	034	032	031	029	027	025	024	022	020	019	
1.9	017	015	014	012	010	008	007	005	003	002	

INCREASING HEMOGLOBIN

To the Editor—Is it true that a 25 per cent solution of iron ammonium citrate half a drachm (2 Gm) after meals will increase the hemoglobin quicker than other iron tonics? Can you cite any proofs? I have been told that other iron combinations are converted in the gastrointestinal tract into insoluble compounds and that only a minute part of each dose is absorbed. Please omit name
M D New York.

ANSWER—There is abundant experimental foundation for the use of large dosages of iron in anemia Whipple and Robscheit-Robbins (*Am J M Sc* 191 11 [Jan] 1936) showed by experiments on standard anemic dogs that a tenfold increase in the dose of iron will almost double the output of hemoglobin Such doubling would cut in half the time required for cure They also find that iron salts are used with equal facility by the dog to produce hemoglobin when given by mouth in the ferrous ferric or reduced state The determining factor is the amount of the iron metal

Schulten (*München med Wchnschr* 77 355 [Feb 28] 1930) found that the poor regeneration in some cases of posthemorrhagic anemia could with regularity be changed to rapid cure by giving iron in sufficiently large doses e g 6 Gm or more in twenty four hours In chlorosis the author finds doses up to 10 Gm of reduced iron necessary to secure good effects

Buresh (*Deutsche med Wchnschr* 59 882 [June 9] 1933) reported several cases of severe anemia following gastric hemorrhage in which large doses (reduced iron from 3 to 6 Gm daily) produced a definitely accelerated blood regeneration as compared with small doses, e g, in the form of Blaud's pills (three twice a day)

Bloedorn (*Minnesota Med* 1 5 [Jan] 1936) concluded from a review of the literature and from his own experience that the optimal daily dose of iron, as metallic iron will fall between 1 and 1.5 Gm. daily

According to Bethell Goldhamer Isaacs and Sturgis (*THE JOURNAL*, Sept 15 1934 p 797) Iron in a soluble salt is apparently more efficiently utilized than the same quantity as ferrum reductum but the latter will produce equally good

results if given in adequate dosage and possesses the advantages of small bulk and comparative freedom from irritative effects on the alimentary tract In our experience 4 Gm of ferric ammonium citrate, representing about 0.8 Gm of iron, or 1.5 Gm of ferrum reductum, is an optimum amount for daily administration, and in these dosages the two forms of iron are quite comparable in their effects"

REACTIONS TO TUBERCULIN TEST

To the Editor—A woman aged 28 had always been in perfect health until about eight months ago when she was given an intracutaneous tuberculin test on the left arm Her brother at that time had a positive pulmonary tuberculosis Her tuberculin test reacted about two plus Several sputum examinations showed no tubercle bacillus She did have an afternoon temperature of 99.4 F for three weeks There was no loss of weight or night sweats There was no cough X ray examination showed a small area of increased density in the left apex about one half inch in diameter which appeared to be heavily calcified About one week after the tuberculin test she developed a constant pain in the left arm that radiated into the hand and axilla Since then it has extended into the left side and left breast The pain seems to be in the muscles and not in the joints The pain became throbbing in character at times There was no noticeable enlargement of the lymph glands in the left axilla Various forms of heat as infrared diathermy and the hot water bottle have been applied Massage with liniment and alcohol have been given She has been given calcium lactate salicylates and A B D capsules All this treatment does not seem to give much relief Her tonsils are out her teeth have been roentgenographed and are normal and the sinuses are clear She has no indigestion no symptoms of kidney trouble and no leukorrhea She states that within the last week the same aching has started in the opposite arm Could this condition be an irritation of the lymphatics caused by the tuberculin test? If so what treatment would you recommend? What is the prognosis?

VERY W RITTER MD Seattle.

ANSWER—The number of tuberculin tests administered in the United States in the past few years is well in the millions Apparently there is no record of any after-effect resulting in the symptoms described in this communication by any of the observers from the time of Mantoux to the present Pirquet described delayed reactions from his test, but they were no different than the usual reactions except in point of time of their appearance Recently it has been observed occasionally that children or young adults who have the tuberculin test administered with no apparent reaction at the usual time of interpretation but who in the course of a few weeks develop some febrile condition, such as scarlet fever, may have definite redness appear round the site of the administration of the tuberculin This phenomenon has not been adequately explained Indeed, it is usually thought that the exanthematous diseases, pregnancy and a few other conditions actually depress allergy but not enough observations have been recorded to convince one that this is always true

In the case cited, the reaction to the tuberculin test was mild No lymphangitis was reported, and there was no visible enlargement of the lymph nodes in the axilla The lymphatic channels from the arm drain into the axillary lymph nodes There is no drainage toward the hand or the breast The pain of which the patient complained in the left arm that radiated into the hand, axilla, side and breast did not make its appearance until one week after the test was administered Moreover, aching has recently appeared in the right arm The progressiveness of the symptoms, together with the fact that such large numbers of tuberculin tests have been administered without the recording of any such complication, leads one to conclude that the development of pain was a coincidence and that its cause must be sought elsewhere.

NON SPORE FORMING ANAEROBES

To the Editor—Kindly list the non spore forming anaerobes Please omit name
M D Chicago

ANSWER—A list of non spore forming anaerobes would consist of scores of long cumbersome scientific names Therefore this question could be answered to the best advantage by referring to a standard manual on bacteriology Determinative Bacteriology by Bergey, contains a list of all bacteria both pathogenic and nonpathogenic Under the various families it is relatively easy to note the anaerobic species

In the family Nitrobacteriaceae, on page 41, species 2, *Thio bacillus denitrificans* is anaerobic

In the family Coccaceae page 47 five species of anaerobic streptococci are noted On page 97 in the family Coccaceae are noted eight species of anaerobic micrococci (species 38 to 46)

In the family Bacteriaceae, page 406 are listed nineteen species of Bacteroides

In the family Actinomycetaceae page 495, is listed one species of Leptotrichia as anaerobic. It is also well known that several species of Actinomycetaceae prefer small quantities of oxygen for growth.

In the family Mycobacteriaceae page 557, are listed four anaerobic species of fusiform bacilli.

In the family Spirochaetaceae page 619, the spirochetes, of which there are several, all grow best at a low oxygen tension. In this family, on page 624, under genus Borrelia, are listed fifteen species most of which have been grown only under strictly anaerobic conditions. In the same family, under genus Treponema, page 627 (in which is included the syphilis organism), seven species are listed, all of which are strictly anaerobic.

It is to be noted of course, that many varieties of bacteria, especially among Spirillaceae and streptococci will grow better under partially anaerobic conditions especially for a time, after isolation from the body.

LIFE EXPECTANCY AND ENDOCRINOLOGY OF ALLERGY

To the Editor—1 What is the average life span of clinically allergic persons, i. e. does the age of death among allergic individuals differ materially from that of the normal person? 2 Are there any figures available as to the relative frequency of hypertension nephritis diabetes cancer and other chronic diseases among allergic persons as compared to the normal person? 3 Is there any theory now accepted as to why many allergic women lose their sensitivity after the menopause? Please omit name.

— Tennessee

ANSWER—1 The expectancy of allergic patients does not differ from nonallergic individuals except in those with asthma. In these, the life expectancy is affected primarily because of the occurrence of pulmonary infections especially pneumonia, and because of myocardial damage (Dublin, L. I. and Marks H. N. Mortality of Risks with Asthma. Published by the Association of Life Insurance Medical Directors of America, Metropolitan Life Insurance Company, 1923).

2 Hypertension is unusual in all allergic conditions while diabetes may be considered almost a rarity in association with allergy.

Regarding the incidence of other chronic diseases among allergic (asthmatic) patients, Bray (Recent Advances in Allergy Philadelphia, P. Blakiston's Son and Co., Inc., 1934 pp 131-140) gives the following analysis of the literature.

Tuberculosis Only one asthmatic patient in a hundred gives any positive evidence of active tuberculosis. Only one patient with active tuberculosis in two hundred suffers from true asthma.

Rheumatism Acute in about 26 per cent of asthmatic patients chronic in 08 per cent of asthmatic patients.

Syphilis Less common in asthmatic than in nonasthmatic persons.

Heart disease Not common in allergy.

Nephritis 06 per cent in asthma.

3 Endocrine disturbances are believed to play a part in allergic symptoms. While rarely if ever of primary importance, their action is to "prepare the soil." Endocrine changes however, may produce opposite effects. They may either predispose to or lessen the tendency for attacks of asthma. Thus the menopause or pregnancy may in some patients mark the beginning or an increased severity of allergic symptoms, while in others it may coincide with the termination or temporary subsidence of allergic symptoms. What these endocrine changes are and how their influence is exerted is not known.

USE OF TETANUS TOXOID

To the Editor—Some time ago it occurred to me that the administration of tetanus toxoid would considerably diminish the necessity for the use of horse serum in sensitive patients. It seems to me that this procedure would be especially valuable in horse-dander sensitive patients as according to a statement in the book Asthma and Hay Fever Theory and Practice by Coca Walzer and Thommen every patient sensitive to horse dander is sensitive to horse serum. I would greatly appreciate your opinion of this procedure in these patients. Is tetanus toxoid available commercially and if so where can it be obtained and what is the dosage?

VICTOR L. CONEY M.D. Buffalo

ANSWER—Rarely tetanus toxoid may give rise to urticaria and systemic reactions. Experience indicates that such an allergic response may be expected in a much smaller percentage after toxoid injections than after injections of antitetanus serum. Tetanus toxoid is available commercially and can be obtained through the drug trade (see report of Council on Pharmacy and Chemistry on Tetanus Toxoid Alum Precipitated THE JOURNAL, May 16 1936 p 1735). It should be noted that

tetanus toxoid is used for lasting preventive immunization against tetanus. As a rule two subcutaneous injections of 1 cc. each are given from six weeks to two or three months apart an additional third dose is given only at the time of the injury. In the preventive treatment of wounded persons, tetanus toxoid is to be used only if the patient has received two injections of toxoid at least a month previous to the injury, in other cases tetanus antitoxin should be given. There is a growing opinion in favor of active immunization against tetanus of persons whose work subjects them especially to the danger of tetanus infection.

SELECTION OF ELECTROCARDIOGRAPH

To the Editor—I shall appreciate your advice regarding the type of electrocardiograph to get for a cardiac clinic. The dispensary cardiac clinic of which I have charge is considering obtaining an electrocardiograph for use in the study of its cardiac patients. Economy is an important matter to the dispensary. Therefore the question is whether a small apparatus such as the Cardiette put out by the Sargent Company would be satisfactory. The cardiac clinic treated 167 patients in 1935 there being 393 treatments. This year there is an increase in attendance and it is felt that an electrocardiograph will serve as a stimulus toward a greater interest in cardiology.

M. D. Connecticut

ANSWER—In choosing an electrocardiograph the following points are of importance accuracy, reliability, durability, ease of operation service (adjustments, repairs, replacement of parts) and cost. While the lower priced instruments are attractive in cost it would seem that for daily service in a cardiac clinic one of the higher priced machines, with presumably more rugged and durable materials, would be preferable. Most cardiologists feel that greater accuracy is had from the "strain" type of electrocardiograph. If the cost of the more expensive machines is prohibitive, the smaller instruments have proved quite satisfactory. Replacement of defective or broken parts and service is of great importance and should be given careful consideration. The choice of an electrocardiograph is much like that of an automobile, their manufacture has become so standardized that the purchaser is assured that he receives what he pays for—no more and no less. One does not expect the performance of a Ford to parallel that of a Lincoln.

OPHTHALMOSCOPIC SIGNS OF DEATH

To the Editor—I read in a newspaper item that a definite diagnosis of death can be made by observing with the ophthalmoscope the broken columns of blood in the retinal vessels. Does it apply to the arteries or veins or both and what is their appearance compared to normal?

WYATT BARNES M.D. Decatur Ala.

ANSWER—The only definite ophthalmoscopic sign of death is the change in the color of the fundus from the normal red to a yellowish. This occurs as nearly coincidental with death as can be detected. In some instances the arteries practically disappear, whereas in others they maintain a full nearly normal appearance. The interrupted blood column makes its appearance only in the veins and is probably due to intravascular coagulation of the blood. A rather complete discussion of this subject is given in the American Encyclopedia of Ophthalmology, volume V, page 3784.

PROSTATITIS DUE TO TRICHOMONAS

To the Editor—I have a patient with frequency and burning of urination and nocturia. Examination of the urine is negative. The secretions expressed from the prostate contains many pus cells and a few Trichomonas vaginalis organisms. The patient's wife is under treatment for Trichomonas vaginalis infestation. I should like to know whether prostatitis caused by Trichomonas vaginalis has been reported and the kind of treatment advised. Please omit name.

M. D. Wyoming

ANSWER—Prostatitis due to Trichomonas vaginalis has been reported by L. G. Stuhler (Proc. Staff Meet. Mayo Clin. 8:221 [April 12] 1933) and by A. C. Drummond with a review of the literature (Am. J. Surg. 31:98 [Jan.] 1936).

About 0.3 per cent of patients with prostatitis will be found to have Trichomonas vaginalis in the prostatic secretion. In any stubborn or rapidly recurrent Trichomonas infection in the female this complication should be suspected and the prostatic secretion of the husband should be examined.

Usually treatment by means of prostatic massage two or three times weekly accompanied by irrigations of the bladder with a warm 1:8000 potassium permanganate solution results in a prompt disappearance of the parasites from the prostatic secretion. If this is not the case one or two intravenous injections of 0.3 Gm. of nearsphenamine at five day intervals should be given.

EFFECTS OF CONGO RED AS HEMOSTATIC

To the Editor—Recently congo red was administered intravenously in a case of persistent profuse bleeding bronchiectasis and the bleeding stopped spectacularly. Of course, the cessation of the hemoptysis might have been purely incidental but I have seen similar results in cases of persistent bleeding peptic ulcer and there are reports in the literature of a similar nature. The congo red was used as a 1 per cent aqueous solution and two injections of 10 cc. each were given twenty four hours apart. Would you please give me the current medical opinion regarding the value of intravenous congo red as a hemostatic in cases of persistent bleeding from the gastro-intestinal and pulmonary organs and the rationale? Please omit name and address.

INTERN New York.

ANSWER.—Wodekind in 1930 observed that congo red had a hemostatic effect in pulmonary hemorrhage when injected intravenously. Becker in 1930 confirmed these observations. Deinhardt in 1931 and Rossak in 1933, as well as Nikolajew and Gurewitsch in 1935, reported favorable results from its use most especially in bleeding from inflammatory gynecologic processes. It was found ineffective by the last named authors in cases of extra uterine pregnancy or hormonal hemorrhages. Graves and Kickham have found it of value in hemorrhages of the urinary tract, provided the patient still possesses a relatively normal coagulation mechanism. It is of no value in actual blood disease. As to the rationale, one may say that a transitory (twenty four hours) shortening of coagulation time has been noted accompanied by an increase in blood platelets. It is also imagined that compression of capillaries may result from the deposit of the dye in the reticulo-endothelial system in which it is promptly stored after its injection into the blood.

BLACK EYE AS SIGN OF INSTANTANEOUS DEATH

To the Editor—Some time ago I was called to the scene of an auto mobile accident. When I arrived a young man had died. The victim had what is commonly known as a black eye. The question arose in my mind as to whether he was killed instantly or not. Was I correct in assuming that if he was killed instantly there would be no ecchymosis of the eyelids as there would be no pressure to force the fluid into the tissues?

C L BOURDEAU MD Missoula Mont.

ANSWER.—If the young man had been killed instantaneously there would have been no time for discoloration of the eyelids by extravasation of blood into the tissues to take place. The question might be raised whether the 'black eye' existed before the fatal injury.

VISSCHER BOWMAN TEST FOR PREGNANCY

To the Editor—I have been taking a series of pregnancy tests using the Viisscher Bowman pregnancy test method. I have been taking the patients at random and have observed frequently that both male and female patients whose urine presents sufficient sugar to reduce Fehling's solution frequently give a positive test. In your opinion do you believe it ultimately a test for a form of metabolic sugar or has it any real value as a pregnancy test?

JOHN F LOEHLE MD Lebanon Pa

ANSWER.—This test is a complicated chemical reaction employing several ingredients, and the final result is not a clearly defined one. A number of different reducing substances may interfere with the test. Consequently its value as a test for the diagnosis of pregnancy is uncertain and therefore unreliable, while so complicated a test cannot reasonably be expected to replace simpler established ones for sugar.

The original article describing it appeared in the *Deutsche medizinische Wochenschrift* 60 1823 (Nov) 1934, abstract references are to be found in *THE JOURNAL*, Feb 2 1935 page 431, and Feb 8, 1936, page 504 and also in the *Journal of Laboratory and Clinical Medicine* 21 986 (June) 1936. The abstract of a subsequent article by C Dolf is to be found in the *British Medical Journal* 1 38 (Feb 29) 1936.

ASH FROM CREMATED HUMAN BODY

To the Editor—How much ash is left after a human body is cremated? I mean the ash of an average adult. If possible give me the weight of the ash in grams. I cannot find this information in the literature. If you cannot help me will you please put me in touch with the people of a big crematory so that I may obtain some literature on cremation.

THOMAS G GAERSTE, MD Curaçao D W I

ANSWER.—The ash of the average cremated adult weighs about 2300 Gm, the weight varying with the size of the bones. Literature on cremation may be obtained from the International Bureau of Cremation at Helsingborg Sweden the Cremation Society of England at London the Cremation Society of America at Portland Ore. or the California Crematorium at Oakland, Calif.

USE OF NITROUS OXIDE GAS IN FOOD PRESERVATION

To the Editor—I am experimenting with the processing of a food by means of nitrous oxide gas which seems to accomplish the purpose better than any other agent I have found. Can you advise me whether there is any known effect on the human system by taking nitrous oxide gas internally? The amount of gas normally consumed in this product would be that occupying the space of a liquid measure of 1½ ounces. I realize that there may be some questions raised on the part of health authorities and I am anxious to get all the reliable data that I can so as to determine whether to pursue the experiment further or not.

S D LEVINGS Chicago

ANSWER.—As far as we know, there is no information in the literature on the use of nitrous oxide for the preservation of meat on a commercial basis. In the curing of certain meats nitrites are used and it is said that gaseous oxides of nitrogen have been tried as substitutes without particular success. There is little information to show that taking nitrous oxide gas internally would be either harmful or harmless. The question of the use of nitrous oxide in the processing of meats awaits adequate experimental investigation before any food product so treated is promulgated to the public. In the absence of adequate data the use of foods so treated might well be viewed with caution.

TESTS OF KIDNEY FUNCTION

To the Editor—I have a patient who is 42 years of age and who excretes no phenolsulfonphthalein. First I gave it intramuscularly and then intravenously. The patient gives a history of low kidney function about thirteen years ago but does not know the exact percentage. There is no clinical evidence of such a test. I would appreciate any information you may have.

LOUIS L SHERMAN MD Oakland Calif

ANSWER.—In Queries and Minor Notes in *THE JOURNAL*, August 22, page 606, "Tests for Urea and Renal Function," are described some tests that can be done in this case. The common cause for lack of excretion of phenolsulfonphthalein with adequate renal function is retention in the urinary tract, either the bladder or the kidney pelvis. A blood urea and excretory urogram should clear up the diagnosis in this case.

ELLIOTT TREATMENT IN GONORRHEA IN WOMEN

To the Editor—I have been led to believe that the early treatment of gonorrhea in women with the Elliott machine is apt to cause a wide dissemination of the infection through the lymphatics. Has clinical experience shown this to be true? Please omit name.

MD Texas

ANSWER.—In the experience of most gynecologists, Elliott treatments are contraindicated during the acute stage of the disease. Treatment increases the discomfort and may add to the severity of the infection.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in *THE JOURNAL*, Aug 29, 1936.

Hospitals Approved for Intern Training

Meadowbrook Hospital Hempstead N Y
Queens General Hospital Jamaica N Y

Hospitals Approved for Residencies in Specialties

St Vincent's Hospital Birmingham Ala Surgery
Olive View Sanatorium Olive View Calif Tuberculosis
Riverside Hospital Jacksonville Fla Mixed
Kansas City General Hospital Kansas City Mo Communicable Disease
Cooper Hospital Camden N J Surgery
New Rochelle Hospital New Rochelle, N Y Radiology

Hospitals Approved for Additional Residencies

Denver General Hospital Denver Tuberculosis
Henry Ford Hospital Detroit Pathology and Pediatrics
Eloise Hospital Eloise Mich Malignant Diseases
University of Nebraska Hospital Omaha Pathology
Bellerue Hospital New York City Neuropsychiatry

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery, June 29 July 1 Sec Dr J N Baker 519 Dexter Ave Montgomery

ARKANSAS *Basic Science* Little Rock Nov 2 Sec. Mr Louis E. Gebauer 701 Main St, Little Rock. *Medical (Regular)* Little Rock Nov 10 Sec Dr A S Buchanan Prescott. *Medical (Eclectic)* Little Rock, Nov 10 Sec Dr Clarence H Young 207½ Main St Little Rock.

CALIFORNIA *Reciprocity* Los Angeles Dec 16 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

CONNECTICUT *Regular* Hartford Nov 10 11 *Endorsement* Hartford Nov 24 Sec. Dr Thomas P Murdock 147 W Main St Meriden *Homeopathic* Derby Nov 10 Sec Dr Joseph H Evans 1488 Chapel St New Haven

DELAWARE Dover July 13 15 Sec. Medical Council of Delaware Dr Joseph S McDaniel Dover

DISTRICT OF COLUMBIA Washington Jan 11 12 Sec Commission on Licensure Dr George C Ruhland 203 District Bldg Washington

FLORIDA Jacksonville Nov 16-17 Sec Dr William M Rowlett P O Box 786 Tampa

KANSAS Topeka Dec 8 9 Sec Board of Medical Registration and Examination Dr C H Ewing 609 Broadway Larned

KENTUCKY Louisville, Dec 2-4 Sec, State Board of Health Dr A T McCormack 532 W Main St Louisville

LOUISIANA New Orleans December Sec Dr Roy B Harrison 1507 Hibernia Bank Bldg New Orleans

MAINE Portland Nov 3-4 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St. Portland

MARYLAND *Regular* Baltimore Dec. 8 Sec Dr John T O Mara 1215 Cathedral St Baltimore. *Homeopathic* Baltimore Dec. 8 9 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston, Nov 17 19 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 F State House, Boston

NEVADA Carson City Nov 2-4 Sec. Dr John E Worden Carson City

NEW YORK Albany Buffalo New York and Syracuse Jan 25 28 Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany

NORTH CAROLINA *Endorsement* Raleigh Nov 30 Sec Dr Ben J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 5 8 Sec Dr G M Williamson 4½ S 3rd St Grand Forks

OKLAHOMA Oklahoma City Dec. 9 Sec Dr James D Osborn Jr Frederick.

OREGON *Basic Science* Portland Nov 21 Sec Mr Charles D Byrne, University of Oregon Eugene. *Medical* Portland Jan. 5 7 Sec Dr Joseph F Wood 509 Selling Bldg Portland.

PENNSYLVANIA Philadelphia January Sec Board of Medical Education and Licensure, Mr James A Newpher Education Bldg Harrisburg

SOUTH CAROLINA Columbia Nov 10 Sec Dr A Earle Booser 505 Saluda Ave. Columbia

SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licensure, Dr B A Dyar Pierre.

TEXAS Waco Nov 10 12 Sec Dr T J Crowe, 918 19 20 Mercantile Bldg Dallas

VERMONT Burlington Feb 10 12 Sec Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond Dec. 9 13 Sec. Dr J W Preston 28½ Franklin Road Roanoke.

WISCONSIN *Basic Science* Milwaukee Dec 19 Sec. Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee. *Medical* Madison Jan 12 14 Sec. Dr Henry J Gramling 2203 S Layton Blvd Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Feb 9 11 June 21 23 and Sept. 13 15 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Philadelphia June Sec Dr C Guy Luce 416 Marlboro St. Boston

AMERICAN BOARD OF INTERNAL MEDICINE Written examination will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St Louis in April. Chairman Dr Walter L. Biering 406 Sixth Ave Des Moines

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada Nov 7 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Cleveland Jan 9 Only applications received by the Secretary on Dec 1 or before will be acted upon by the Board Sec., Dr Fremont A. Chandler 180 N Michigan Ave. Chicago

AMERICAN BOARD OF PATHOLOGY Baltimore Nov 17 18 Sec., Dr F W Hartman Henry Ford Hospital, Detroit, Mich

AMERICAN BOARD OF PEDIATRICS Baltimore Nov 15 and Cincinnati Nov 19 Sec Dr C A Aldrich 723 Elm St. Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec 29 30 Application must be sent to the Secretary before Oct 30 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C

AMERICAN BOARD OF RADIOLOGIC Atlantic City June 4 6 Sec Dr Burt R Kirklind Mayo Clinic Rochester

AMERICAN BOARD OF UROLOGY Chicago Dec. 4 6 Sec. Dr Gilbert I Thomas 1009 N collect Ave Minneapolis

South Dakota July Report

Dr Park B Jenkins, director, Division of Medical Licensure, reports the written and practical examination held in Rapid City, July 21-22, 1936. The examination covered 13 subjects and included 90 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. One physician was licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Loyola University School of Medicine	(1935)	1	1
Northwestern University Medical School	(1936)	1	1
Rush Medical College	(1926) (1934)	(1936 2)	4
Johns Hopkins University School of Medicine	(1931)	1	1
Univ of Minnesota Medical School (1934)	(1935)	(1936 2)	4
University of Nebraska College of Medicine	(1931)	1	1

School	LICENSED BY RECIPROCITY	Year Grad.	Number Passed
State University of Iowa College of Medicine	(1932)	1	1

School	LICENSED BY ENDORSEMENT	Year Grad.	Number Passed
Harvard University Medical School	(1931) N B M Ex.	1	1
University of Michigan Medical School	(1930) N B M Ex.	1	1

* This applicant has received the M B degree and will receive the M D degree on completion of internship

National Board of Medical Examiners

The National Board of Medical Examiners reports that its certificate was awarded to 394 candidates who passed the final examination held during June and July 1935. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine	(1935 3)		3
College of Medical Evangelists (1933 2)	(1934) (1935 14)		(6)
(1936 49)			4
Univ of Colorado School of Medicine (1933 2)	(1934) (1935)		37
Yale Univ School of Medicine (1933 3)	(1934 15)	(1935 14)	4
George Washington University School of Medicine	(1935 4)		28
Georgetown Univ School of Med (1932)	(1934, 3)	(1935 24)	1
University of Georgia School of Medicine	(1935)		6
Loyola University School of Medicine	(1935)	(1936 3)	4
Northwestern University Medical School	(1935 2)	(1936 4)	6
Rush Medical College	(1934 3), (1935)	(1936 2)	5
School of Medicine of the Division of the Biological Sciences	(1934 2)		3
University of Illinois College of Medicine	(1931)		1
University of Kansas School of Medicine	(1934)		1
Univ of Louisville School of Medicine	(1934 2)	(1935 2)	4
Tulane Univ of Louisiana School of Med (1933 3)	(1934 2)		5
Johns Hopkins University School of Medicine (1928)	(1933, 2) (1934 3) (1935)		6
University of Maryland School of Medicine and College of Physicians and Surgeons	(1935)		1
Boston Univ School of Medicine (1933)	(1934 2) (1935 1)	(1936 1)	10
Harvard University Medical School (1915)	(1926) (1929)		47
(1930) (1931 5) (1932) (1933 11) (1934 18)	(1935 3)		18
Tufts College Med School (1932)	(1933), (1934 4)	(1935 17)	4
University of Michigan Medical School	(1932)	(1933 3)	2
Wayne University College of Medicine	(1936 2)		17
Univ of Minnesota Med School (1934)	(1935 6)	(1936 5)	11
St. Louis University School of Medicine	(1935 2)		3
Washington Univ School of Medicine (1933)	(1934)	(1935)	1
Creighton University School of Medicine	(1935)		1
University of Nebraska College of Medicine (1930)	(1933)		4
(1934), (1935)	(1935 6)		6
Albany Medical College	(1935)		1
Columbia University College of Physicians and Surgeons	(1933) (1934 3)	(1935)	5
Cornell Univ Med College (1931)	(1933) (1934 5)	(1935 4)	11
Long Island College of Medicine	(1935 3)		3
New York Homeopathic Medical College and Flower Hospital	(1933)		1
New York University University and Bellevue Hospital Medical College	(1933 2) (1934 2)	(1935)	4
New York University College of Medicine	(1935)		1
Syracuse University College of Medicine	(1933)	(1935 2)	2
University of Buffalo School of Medicine	(1935 2)		2
University of Rochester School of Medicine	(1934)		1
Duke Univ School of Medicine (1932)	(1934 11)	(1935 4)	15
Western Reserve Univ School of Medicine (1933)	(1935)		2
University of Oklahoma School of Medicine	(1934)	(1935)	1
University of Oregon Medical School	(1932)	(1934 3)	6
Jefferson Medical College of Philadelphia	(1935 6)		6
Temple University School of Medicine	(1933 2)		2
University of Pennsylvania School of Medicine	(1933 9) (1935 7)		16
University of Pittsburgh School of Medicine	(1935)		1
Woman's Medical College of Pennsylvania (1933)	(1934)		1
(1935 4)	(1935)		4
Meharry Medical College	(1931)	(1935)	1
Vanderbilt University School of Medicine	(1933 2) (1934)		4
(1935, 4)	(1935)		4
University of Vermont College of Medicine	(1932)	(1934)	5
Medical College of Virginia	(1935 5)		5
Marquette University School of Medicine (192)	(1936 2)		2
University of Toronto Faculty of Medicine	(1933)		1
McGill University Faculty of Medicine	(1934 2) (1935 4)		6
Friedrich Wilhelms-Universität Medizinische Fakultät Berlin	(1934)		1

Book Notices

The Diseases of the Endocrine Glands By Hermann Zondek M.D. Director of the Medical Division Bikur Cholim Hospital Jerusalem Third edition translated by Carl Prausnitz M.D. M.R.C.S. L.R.C.P. Honorary Research Fellow Victoria University of Manchester Cloth Price \$11 Pp 492 with 168 illustrations. Baltimore William Wood & Company 1935

This volume is now in its third edition, based on the last German edition, which appeared in 1926. However, it takes account of recent advances and presents particularly Zondek's point of view in relationship to the significance of the endocrine system. Its author is widely known as a leader in research in this field in Germany who subsequently was obliged to leave Germany and settled in Manchester, going finally to Jerusalem where he is now in practice. The present edition was translated by Carl Prausnitz, also a former German physician, who also more recently has been established in Great Britain. The Zondek volume begins with a historical introduction and discusses the relationship between the glands and their physiology and chemistry. It discusses also the vitamins and the relationship of the glandular system to the endocrine system. Next it is concerned with methods for the examination of patients and with organotherapy. The second half of the book deals with specific conditions such as goiter, cretinism, obesity, gigantism and dwarfism and the other extraordinary conditions that result in the human body when the glands fail or go astray in their functions. The book is supplemented by an excellent bibliography and numerous well chosen illustrations. It is provided also with a most competent index.

Kurzgefasstes Lehrbuch der Psychiatrie Von Dr. Johannes Lange o. Professor der Psychiatrie in Breslau. Second edition. Paper. Price 7.20 marks. Pp 260 with 4 illustrations. Leipzig Georg Thieme 1936

This compend of psychiatry is the second improved edition to be published. It consists of six chapters, on (1) general psychiatry, (2) varieties of disease, (3) treatment, (4) examination, history, diagnosis and important factors to be remembered in psychiatric disorders, (5) appendix and (6) bibliography. The first chapter includes general symptomatology, causes and discussions of the various psychoses. The second chapter includes the varieties of the psychoses beginning with congenital and abiotrophic entities, traumatic psychoses, dementia paralytica, cerebral syphilis and psychoses epidemic encephalitis, psychoses of the aged, Huntington's chorea, other psychoses associated with encephalitis, meningitis, multiple sclerosis, chorea minor, paralysis agitans, athetosis and brain tumors, psychic disturbances due to acute infections and disturbances of the internal organs, alcoholism, drug addiction, psychoses from other poisons, genuine epilepsy, schizophrenia, manic-depressive psychoses, psychopathic personality and abnormal mental reactions. In the third chapter on treatment, Lange discusses preventive measures, marriage psychotherapy, Freudian and Adlerian concepts, suicides, compulsion, sedatives and the interruption of pregnancy. The fourth chapter consists of a discussion regarding examination history and diagnosis in mental disease. The fifth chapter includes Binet-Simon and Sommer mental tests as well as a general examination regarding school knowledge, practical knowledge, questions of ethics, ability to comprehend judgment and facilities for imagination. The bibliography consists of twenty references. This book is recommended to neuropsychiatrists.

A Textbook of Psychiatry By Arthur P. Noyes M.D. Superintendent State Hospital for Mental Diseases Howard Rhode Island. Second edition. Fabrikoid. Price \$2.50. Pp 329. New York Macmillan Company 1936

The second edition of this excellent textbook for nurses is highly satisfactory. The comment can be made that it is probably as valuable for beginning psychiatrists and students in psychiatry as for nurses. While in detail it is not as complete as this author's textbook on Modern Clinical Psychiatry, the descriptions of disease entities are relatively complete nevertheless and so well written that the conditions can be easily understood even by the nurse who is not specially psychiatrically trained. The discussion of psychiatric nursing management is rather general in the case of each entity. Unfortunately, in no place in the book is much space devoted to details of the special and important forms of therapy usually

carried out by nurses, such as recreational therapy, occupational therapy and hydrotherapy, but there is a chapter on psychiatric nursing in which there is a brief general discussion of these forms of treatment. There is some general discussion at the end of the volume covering mental hygiene, mental deficiency and the psychoneuroses which should be of some cultural interest to nurses but probably will be ignored by most of them. The psychoneuroses, however, are not stressed thus emphasizing the hospital rather than the clinical side of psychiatry. All in all the book continues to be the same satisfactory psychiatric contribution as was its first edition, and it stands well up in the list of works that can be used for teaching nurses the difficult subject of psychiatric nursing.

The Extra Ocular Muscles. A Clinical Study of Normal and Abnormal Ocular Motility By Luther C. Peter M.D. M.D. Sc.D. Professor of Diseases of the Eye in the Graduate School of Medicine of the University of Pennsylvania. Second edition. Cloth. Price \$4.50. Pp 351 with 141 illustrations. Philadelphia Lea & Febiger 1936

In 1920 there appeared in these pages a review of the first edition of Peter's *Muscles* and now after sixteen years a second edition has been published. The text is somewhat the same, albeit elaborated, which makes the new book fifty-seven pages more than the old. In the first part, devoted to anatomy and physiology, there is considerable more about instruments for the measurement of binocular vision and fusion and their use, but the anatomy is the same. Almost nothing new has been added to the chapter on heterophoria, nor has the material been rewritten. In esotropia the author has committed himself to the belief that the amblyopia present is the result of disuse and consequently is a symptom and not the cause of the squint. Fortunately he has stated this as his belief for certainly it is not the universal opinion. Nor will his statements as to the results procured in the endeavor to develop vision in such amblyopias find universal credence. The O'Connor cinch operation is given much more space and in the hands of the author seems to have yielded satisfactory results. Also the entire chapter on surgery is enlarged and made much more useful. The final chapter, on nystagmus, is unchanged, even to the complete omission of the name of Ohm of Bottrop. The original review said: 'The text is excellent and practical, the illustrations good and really illustrative, and the bookmaking and binding satisfactory. This is a book that every ophthalmic student and practicing ophthalmologist can read with profit and pleasure.'

Les syndromes neuro-hématiques Par Henri Roger, professeur de clinique des maladies nerveuses à la Faculté de médecine de Marseille et Jean Olmer, médecin des hôpitaux de Marseille. Paper. Price 32 francs. Pp 230. Paris Masson & Cie 1936

This monograph is concerned with the neurologic manifestations of diseases of the blood-forming organs. The first chapter deals with the neuro-anemic syndromes. This phase of the subject receives detailed discussion. The authors discuss their frequency, the work that has been done on the subject, and the theoretical and practical problems they present. After the discussion of the historical development of the subject and etiologic aspects, they consider the clinical and therapeutic applications. The diverse nature of nervous symptoms is pointed out and the authors classify them into medullary (medullo-anemic syndromes), encephalic (encephalo-anemic or psycho-anemic syndromes) and neuritic (poly-neuro-anemic syndromes). All forms of anemia are considered from simple hypochromic anemia to pernicious anemia. The pathologic anatomy, pathogenesis and therapy are finally discussed. The second part deals with neurologic disturbances when the red blood cells are above normal (neuropoly-cythemic syndrome). The third chapter deals with neuroleukemic syndromes. In this group the pathogenesis is not always uniform and may result from hemorrhage or true leukemic infiltration. Under the neurohemorrhagic syndromes, hemophilia and purpuras are included and nervous accidents following blood loss in general are discussed. In the discussion of Hodgkin's disease the authors bring out the fact that there has been an increasing incidence of neurologic symptoms in this disorder within recent years. The various sites infiltrated by malignant lympho-granulomas are discussed. Finally, after considering the diseases of the blood that react on the central and peripheral nervous system, the authors devote the last chapter of the book to cases in which the modification of the blood or even diseases

of the blood-forming organs are in consequence of alteration of the nervous system (hematoneurosyndromes). Much of the material in this chapter deals with the modification of the red and white cell series by disturbances of the sympathetic and parasympathetic nervous system under experimental conditions. The authors raise the question as to the possibility of a central regulation of the blood formula. The monograph is an important collection of data that should interest the neurologist and the hematologist. The literature on the various subjects is well covered and at the end of each chapter is a well selected bibliography.

Die Ursprünge des Verbrechens Dargestellt am Lebenslauf von Zwillingen Von Dr. Friedrich Stumpfl. Boards. Price 5.80 marks. Pp. 176 with 3 illustrations. Leipzig: Georg Thieme, 1936.

The author continues the investigations originated by Johannes Lange on Crime as Destiny, *Studies on Criminal Twins*, Leipzig, 1929. Stumpfl presents his own results of a study of thirty-seven sets of twins, in whom at least one member of the pair had been guilty of some criminal act. Of the male pairs, fifteen were identical or one-egg twins, seventeen pairs were not. Of the female pairs, three were identical, two were not. In the earlier part of the volume a detailed history of each pair of twins investigated is presented. The author attempts to analyze each group on the basis of a number of specific factors, and the results are clearly presented in tabulated form. Since the author is studying criminality in twins the first factor considered is whether or not both members of a pair were guilty of crimes. If both committed offenses, the correlation is indicated as positive. The second factor considered is whether each one of the twins committed only one crime or was a multiple offender. Stumpfl also records whether the crimes were similar or dissimilar in nature. In the fourth place, he considers the environment and mode of life of each of the twins. The fifth factor is a consideration of the abnormal character of the individuals. In psychopathic twins, agreement of the latter factor indicates concordance of the abnormalities. A study of the tables reveals that the identical twins show far greater agreement in criminality than the nonidentical, which is not surprising to any one who believes that the tendency to crime is hereditary as identical twins tend to show greater fundamental similarity. The author's results indicate a preponderance of the hereditary factor in the origin of crime, with which conclusion some sociologists might be inclined to disagree. The difficulty of obtaining a sufficient number of cases of this particular kind is obvious. Nevertheless, the results in this and previous studies are significant. It would be desirable for the purpose of drawing more definite conclusions that a study be made of crime in identical twins reared apart. Adequate information of this type is the most difficult of all to obtain. Studies of twins appear to offer a logical and promising field for a better understanding of the age old question whether nature or nurture is the greatest influence in the destiny of man's life. Stumpfl's contribution while limited in scope, should stimulate further investigation along this line.

Collected Writings Alfred F. Hess. In two volumes. Cloth. Price \$15 per set. Pp. 719, 734 with 127 illustrations. Springfield, Illinois: C. C. Thomas, 1936.

The collected writings of Alfred Fabian Hess (1875-1933) contain the most important papers published during his lifetime. Mrs. Hess has written a short foreword. A biographic memoir written by Abraham Flexner is an appropriate introduction to this important collection of papers. As an investigator and contributor to the progress of pediatrics, Hess had no peer in America. Abraham Flexner quotes Dr. Edwards A. Park, who said that "Hess was the best example of what can be accomplished in science by the ability to think alone and unaided." Park continues: "Hess was the foremost investigator among pediatricians in this country. There was no one else who could possibly be compared with him." His medical papers cover a wide range of subjects, most of which show originality and painstaking work. His first papers dealt with pathologic and clinical subjects particularly tuberculosis in infants, enlargement of the lymph nodes, tuberculosis of the tonsils, primary tuberculosis of the mesenteric glands, the incidence of tubercle bacilli in New York City milk, and other papers on this subject. His contributions on infantile scurvy introduced some of our modern conceptions of this disease. He found that boiling milk

and vegetables destroyed the antiscorbutic factor, though he demonstrated that canned vegetables retain their vitamin C content. He also showed that scurvy may exist in latent form. His contributions to our knowledge of this disease added materially in a more complete understanding of its nature and etiologic aspects. One of his late papers on this subject dealt with the urinary excretion of the vitamin C factor. Hess next turned his attention to a study of rickets. These investigations were epoch making in character. After the profession was becoming skeptical about the potency of cod liver oil, it remained for Hess to show that it had specific curative properties. He discovered that vitamin D in food substances could be produced by irradiation, and also that it was possible to irradiate milk. Other investigations and papers deal with the isolation of the D substance in the sterile fraction of the food. He wrote on the spectrographic method for the study of vitamin D and also described a method for biologic assay of vitamin D in the blood and excreta. In his later papers he became interested in the relationship of foods to dentition and also on radiographic studies of calcification of the teeth from birth to adolescence and the relation of rickets to dental caries in the deciduous and permanent teeth. These collected writings of Alfred Fabian Hess commemorate the life work of one who had a genius for scientific investigation and who showed an unflinching industry and rare intellectual gifts. These volumes will have a permanent value in the story of the progress and development of American medicine.

Lexikon der kosmetischen Praxis. Bearbeitet von In und ausländischen Fachleuten aus Wissenschaft und Praxis. Schriftleitung: R. Volk und F. Winter. Paper. Price 75 marks. Pp. 705 with illustrations. Vienna: Julius Springer, 1936.

A condensed review scarcely does justice to work of this magnitude. The masterly presentation of the entire field of cosmetics as well as the discussion of related subjects on plastic surgery, dermatology, pharmacology and pharmacy in lexicographic style makes information readily available. Hygiene, vitamins, allergies, cosmetic surgery and cosmetic preparations are presented in the light of recent contributions. The clear, precise and concise language may be easily interpreted by a professional man with the aid of a small scientific dictionary. Technical details are given with ample references to the latest literature. The numerous illustrations are excellent. Though compiled by experts in each field, the unity of the work is undisturbed. The book will be a valuable addition to those interested in the fields covered. Compilers, editors and publisher are to be thanked for giving such a timely work to the specialists in each subject. The book may be recommended because of its relative completeness.

Animal Micrology Practical Exercises in Zoological Micro Technique. By Michael F. Guyer, Professor of Zoology in the University of Wisconsin. With a chapter on Drawing by Elizabeth A. (Smith) Reese. Fourth edition. Cloth \$2.50. Pp. 331 with 76 illustrations. Chicago: University of Chicago Press, 1936.

For thirty years Professor Guyer's handbook of microscopic technique has been used by students as an aid in the intricacies of the preparation of animal tissues by fixation, sectioning and differential staining for the microscopic study of their cellular structure. This edition has been rewritten entirely so as to incorporate recent improvements, among which is the use of paraffin or diethylene oxide method of embedding tissues in paraffin. This avoids the hardening effects of absolute alcohol and clearing reagents shortens the time of preparation and preserves normal structure. Recently tertiary butyl alcohol was found to have similar desirable qualities. The book presents only well proved standard methods but covers the entire range of microscopic technique in animal micrology, with chapters on blood, bacteria, embryologic and cytologic techniques, reconstruction, drawing the microscope, and standard reagents. There is also an extended tabular view of methods for the preparation of animal tissues and organs and directions for the preparation of material for zoological laboratory courses. The author might have emphasized in the preparation of smears of stools for intestinal Protozoa the value of fixation by hot (60 C.) Schaudinn's fluid with the addition of glacial acetic acid (4 per cent) and the rapid method of staining with the use of warm (30 C.) iron-alum and hematoxylin. The use of Wolff's pencils in the preparation of pencil drawings for halftone illustrations might also be added in the next edition.

A Treatise on Materia Medica and Therapeutics Including Pharmacy Dispersing Pharmacology and Administration of Drugs By the late Rakhaldas Ghosh. Fourteenth edition. By Birendra Nath Ghosh F.R.F.P. & S. Professor of Pharmacology Carmichael Medical College Calcutta. Cloth Price Rs 7 As 12s 6d Pp 724 with 13 illustrations. Calcutta Hilton & Co 1936

There has been a progressive "modernization" in successive editions of this book until this edition looks much like an English or American book on the same subject, and it has been brought down to date also in its contents. It conforms to the British Pharmacopoeia (1932) and to the British Pharmaceutical Codex and in addition it lists the Indian indigenous drugs in a special section of about ten pages devoted merely to some important and commonly used drugs. Such selection makes this chapter all the more interesting, as it may well be assumed that some of these at least may also be worthy of attention outside of India. The author attempts to make his book a work on pharmacology as applied to therapeutics" and he regrets that "the teaching of pharmacology is not as an applied subject but as a separate subject detached from therapeutics." A result of such teaching is that "while a student, or for that matter a junior practitioner, may possess a knowledge of modern pharmacology, he is incapable of writing a prescription free from incompatibles and based on rational principles, with the result that he has recourse to the use of set prescriptions or proprietary remedies of questionable value." To all this one may say "Amen."

College Biology By Walter H. Wellhouse Professor of Biology Iowa State College and George O. Hendrickson Assistant Professor of Zoology Iowa State College. Cloth Price \$3 Pp 381 with 166 illustrations. New York F. S. Crofts & Co 1936

This is the sort of textbook that perpetuates misinformation under the guise of a readable style and altruistic motives. The preface states that emphasis is placed on the biologic bases underlying human behavior and on the interests of general students rather than on the preparation of future biologists. Much of the material contained is stated to be original. Some of it certainly is. The book is inaccurate and often misleading. A few instances will suffice to illustrate the uncritical writing. Plasmodium is stated to form spores in red blood cells, Noctiluca to inhabit tropical seas and to give them the color of tomato soup, a trypanosome to cause a deadly sleeping sickness in South Africa, free oxygen present in digesting food to be utilized by the tapeworm in respiration, man to obtain Trichinella worms by eating "measly" pork and little hookworms in the soil to hook onto human skin and dig their way into the blood stream. Many of the illustrations are well known veterans long in service or wretchedly inadequate new ones, and all are poorly executed. Publishers might profit by having manuscripts critically read before investing in printing them. High schools, junior colleges and state colleges should have textbooks as critically written in matters of scientific accuracy as colleges and universities.

Die Chirurgie der Schädelbasalfrakturen auf Grund 25jähriger Erfahrungen Von Dr. Otto Voss o. B. Professor und Direktor der Univ. Ohren Hals Nasenkl. an der Johann Wolfgang Goethe Universität Frankfurt a. M. Paper Price 24 marks Pp 182 with 93 illustrations. Leipzig Johann Ambrosius Barth 1936

Voss considers the surgical management of basal skull fractures from a point of vantage acquired through twenty-five years experience. His discussion is based on a study of 122 selected cases of basal skull fractures of which seventy-seven were treated by operation and forty-five by conservative management with a total mortality of 20.5 per cent for the 122 selected cases. General remarks on etiology and pathology are followed by statistical consideration and a detailed pathologic study of special types of basal fractures. Symptoms and signs, especially those associated with involvement of the petrous portion of the temporal bone are correlated with the roentgenologic and operative observations. Under treatment the author discusses indications and contraindications for operation, technic and route of approach, and tabulates the types of operations performed. Case reports and consideration of individual cases give the reader a clear concept of the author's views in diagnosis and treatment. The book is well illustrated with reproductions of excellent photographs of gross pathologic specimens and x-ray films and with numerous colored drawings of histologic

preparations. An extensive bibliography is included. Since the author's material is for the most part a selection of complicated cases with traumatic involvement of the auditory and vestibular apparatus, the facial nerve and the nasal accessory sinuses, or with infection of the ear and meninges, the book will be of more interest to the specialist in head injuries and to the otorhinologist than to the general practitioner.

The Relationship of Eye Muscles to Semicircular Canal Currents in Rotationally Induced Nystagmus By John Favilli A.B. M.D. F.A.C.P. Clinical Professor of Neurology University of Chicago. Cloth Pp 46 with 7 illustrations. Privately printed Chicago 1936

This little work contains results of research over a considerable period of years and embodies a number of papers previously published in various journals and in one book on neurology. After an introduction in which the original work of Ewald is discussed and the views of Ruttin, Lemere and Quix are given the author discusses the assignment of eye muscles to canal currents. The recognized types of nystagmus induced by rotation are presented in a table. Furthermore there is a table showing the theoretically possible types of nystagmus produced by rotation. The author states that the "total number of possible currents or combinations of currents in one labyrinth is twenty-six." Fourteen current pictures account for the known types of induced nystagmus. Twenty-six current pictures remain. Calculations were made as to how to produce these by rotation and what eye movements would result. Experiments with one normal man show the results as predicted." There is a fairly comprehensive bibliography appended, and seven tables are included. This little brochure should prove interesting to all who concern themselves with tests of the vestibular mechanism.

Dermatologie und Chirurgie Darstellung der Grenzgebiete für die Praxis Von Wilhelm Richter Direktor der Universitäts-Hautklinik Greifswald. Mit Geleitworten von Prof. Dr. A. Bier und Prof. Dr. K. Zieler. Paper Price 34 marks Pp 477 with 356 illustrations. Leipzig Leopold Voss 1936

This volume is devoted to the borderlines of dermatology and surgery, written by a dermatologist who served as a consultant at the surgical clinic of Professor Bier. The material is considered in eleven subdivisions and covers more than 250 diseases, many of which are not usually found in textbooks of dermatology. Thus one finds sections on various types of muscle, bone and joint diseases, oral lesions, the surgical complications of syphilis and tuberculosis an unusually complete presentation of tumors of the skin, a detailed description of the different types of cutaneous gangrene and some of the surgical forms of venereal diseases. No attempt is made to present surgical technic or to duplicate the field usually included in books on minor surgery. Emphasis is placed on localization, symptomatology and histopathology as aids to diagnosis and on etiology and pathogenesis as aids to treatment. The large number of black and white and histologic illustrations are well selected and unusually clear. At the end of the book is a bibliography which seems rather incomplete and only rarely gives credit to American authors for their contributions to modern dermatology. In spite of this omission this book can be highly recommended for its vivid portrayal of the borderline field of two important medical specialties.

Why Keep Them Alive? By Paul de Kruif in collaboration with Ithea de Kruif. Cloth Price \$3 Pp 203. New York Harcourt Brace & Company 1936

Most of the writings of Paul de Kruif which appear in this book have been published previously in the *Country Gentleman* or in the *Ladies Home Journal*. Paul de Kruif has established his ability to dramatize medical discoveries and medical work. In this book he is concerned with malnutrition and disease as they affect children, observing the results of malnutrition and disease on the growing child and cogitating as to the failure of our civilization to meet this problem. Dr. de Kruif becomes well nigh frantic in his emotional response and conveys his franticism to the reader by the manner of his expression. As is unfortunately typical of his other writings in the field of medicine he is far too willing to accept research as established discoveries and is usually too ready to recommend acceptance as routine of a method or technic which is still in an experimental stage. He is likely to assign far too much credit to one

individual for the development of a method or a technic when the work of that individual may not even warrant a share of the credit or priority. Nevertheless, the general effect of his works is good, and they are, moreover, sufficiently popular to command for him a wide audience. 'Why Keep Them Alive?' is more dramatic and moving than some of his previous contributions, yet it cannot compare in interest or authenticity with his world-known contribution on "Microbe Hunters."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts Corporate Practice of Medicine Illegal in Illinois—The United Medical Service, Inc., a corporation organized for profit operated a clinic in Chicago rendering an advertised fixed-fee low-cost medical service through licensed physicians employed and paid by the corporation. The state by its attorney general petitioned for leave to file an information in the nature of a quo warranto to require the corporation to show by what warrant it engaged in the practice of medicine. The trial court held that the corporation could not legally practice medicine in Illinois and rendered a judgment against it. From this judgment the corporation appealed to the Supreme Court of Illinois.

The corporation contended among other things that the ownership of a clinic with offices where the treatment of disease is engaged in solely by licensed physicians employed by the corporation does not constitute the practice of medicine by the corporation. It argued that the fact that the contract of payment for the medical services to be rendered is made between the corporation and the patient does not change the professional relationship between the patient and the physicians who treat him in the corporation's offices. With this contention the Supreme Court could not agree, citing a former decision by the court in *Dr Allison Dentist v Allison* 360 Ill 638, 196 N E 799 wherein it was said after pointing out that the practice of a profession is subject to licensing and regulation and is not subject to commercialization or exploitation.

To practice a profession requires something more than the financial ability to hire competent persons to do the actual work. It can be done only by a duly qualified human being and to qualify something more than mere knowledge or skill is essential. No corporation can qualify.

From the stipulated facts the court said the United Medical Service Inc., had been engaged in the pursuit of activities which under the medical practice act it could not pursue without a license. The medical practice act evinces the manifest intent on the part of the legislature that only individuals may obtain a license to practice medicine. No corporation can meet the requirements of the act. The fact that the certificate of incorporation of the United Medical Service states that one of the corporate objects is the prevention and treatment of disease for profit does not legalize the practice of medicine by the corporation. When a corporation for profit is formed under the general act relating to incorporation the laws of the state determine what powers may be lawfully exercised not the statement appearing in the certificate of incorporation.

A corporate franchise the court said proceeds from the sovereign power and the people have the right at all times to inquire into the title by which such a franchise is claimed or exercised and to have a judgment of ouster if the franchise was improperly granted. In the present case the only relief sought and obtained was the ouster of the corporation from the assumption and usurpation of a franchise charged to have been improperly granted to it. Quo warranto was therefore the proper remedy. The fact that the medical practice act subjects violators to a possible fine or imprisonment does not preclude the use of quo warranto. From the express language of the act in the opinion of the court it is apparent that the penalties prescribed are directed primarily against individuals practicing medicine without a license. The punishment by

incarceration is not applicable to corporations. The maximum fine of \$500 that may be imposed, if it applies both to corporations and to individuals, hardly affords an adequate remedy to prevent recurrences of the unlawful exercise of a power improperly conferred on corporations such as the United Medical Service. There was, therefore no adequate remedy provided in the medical practice act that could be invoked in the present case.

If the medical practice act be construed to prohibit corporations from practicing medicine by employing licensed physicians to that end, the United Medical Service contended, the act constitutes an unreasonable exercise of the police power by the state. The police power of the state and the Supreme Court includes the power to enact comprehensive detailed and rigid regulations for the practice of medicine surgery and dentistry. There is no right to practice medicine which is not subordinate to the police power. To sustain its contention, the United Medical Service relied on *Liggett v Baldridge* 27 U S 105, 49 S Ct 57 73 L Ed 204, wherein the United States Supreme Court held invalid a Pennsylvania statute providing that every pharmacy or drug store should be owned only by a licensed pharmacist and that no corporation association or copartnership should own a pharmacy unless all the members or partners were licensed pharmacists. The United States Supreme Court held that mere stock ownership in a corporation owning and operating a drug store could have no real or substantial relation to the public health and that the law was an unreasonable and unnecessary restriction on private business. It does not follow, however said the Supreme Court of Illinois, that because a person may have a constitutional property right to operate a drug store he has a like absolute right to engage in the practice of a profession such as medicine dentistry or law. Neither a natural person nor an intangible entity can complain if unable to fulfil the requirements reasonably prerequisite to obtaining a license to engage in a particular profession. The holding in the *Liggett* case continued the court, does not conflict with the well established rule that the state may deny to corporations the right to practice professions and insist on the personal obligations of individual practitioners.

The judgment of the superior court against the United Medical Service, Inc. was therefore affirmed.—*People by Kerner Atty Gen v United Medical Service Inc (Ill)* 200 N E 15.

Society Proceedings

COMING MEETINGS

- American Association of Railway Surgeons Chicago Nov 5-7 Dr Daniel B Moss 547 West Jackson Blvd Chicago Secretary
- American Clinical and Climatological Association Richmond Va Oct 26-28 Dr Francis M Rackemann 263 Beacon St Boston Secretary
- American Society of Tropical Medicine Baltimore November 18 Dr N Paul Hudson Department of Bacteriology Ohio Secretary
- University of Columbus Ohio Secretary
- Association of American Medical Colleges Atlanta Ga Oct 26-28 Dr Fred C Zapffe 5 South Wabash Ave Chicago Secretary
- Association of Military Surgeons of the United States Detroit Oct 29-31 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
- Central Society for Clinical Research Chicago Nov 6-7 Dr Lawrence D Thompson 4932 Maryland Ave St Louis Secretary
- National Society for the Prevention of Blindness Columbus Ohio Dec 3-5 Mr Lewis H Carrist 26 West 50th St New York Mar 1936 Secretary
- New York State Association of Public Health Laboratories Albany Nov 6 Miss Mary B Kirkbride New Scotland Avenue Albany Secretary
- Omaha Mid West Clinical Society Omaha Oct 26-30 Dr J D McCarthy 107 South 17th St Omaha Secretary
- Pacific Coast Society of Obstetrics and Gynecology Seattle Nov 11-14 Dr T Floyd Bell 400 29th St Oakland Calif Secretary
- Radiological Society of North America Cincinnati Nov 30-Dec 4 Dr Donald S Childs 607 Medical Arts Building Syracuse N Y Secretary
- Southern Medical Association Baltimore, November 14-16 Dr Loran Empire Building Birmingham Ala Secretary
- Southern Surgical Association Edgewater Park Md Dec 1-3 Dr F Alton Ochsner 1430 Tulane Ave New Orleans Secretary
- Southwestern Medical Association El Paso Texas Nov 19-21 Dr Orville E Egbert 116 Mills Street El Paso Secretary
- Texas Ophthalmological and Oto-Laryngological Society Fort Worth Dec 4-5 Dr Kelly Cox 1719 Pacific Ave Dallas Secretary
- Tri States Medical Society of Texas Louisiana and Arkansas Dec 26-27 Dr John M Flieri Mt Pleasant Texas Secretary
- Western Surgical Association Kansas City Mo Dec 11-13 Dr Montgomery 122 S Michigan Blvd Chicago Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Surgery, New York

33: 171-340 (Aug.) 1936

- Cancer of Face Especially Region of Eye Method of Treatment H L Albright Boston—p 176
Significance of Gross Hemorrhage in Peptic Ulcer J W Hinton New York—p 180
Intravenous Use of Pitocin L H Douglass J E Savage and E N DuPuy Baltimore—p 183
Closed Reduction of Reversed Colles Fractures P W Greeley Winnetka Ill and M H Hobart Evanston Ill—p 186
Use of Urea to Stimulate Healing in Chronic Purulent Wounds W Robinson Washington D C—p 192
Medicolegal Role of Trauma in Brain Tumors R H Fowler Newark N J—p 198
Lumbar Puncture in Head Injuries F I Shatara Brooklyn—p 204
Pulmonary Embolism Based on Study of 271 Instances D C Collins Los Angeles—p 210
Clean Wound Surgery in Hot Climates F G Irwin and J Pla San Juan Puerto Rico—p 220
Compound Colored Alcoholic Solution of Mercuric Chloride for Skin Disinfection J J Kirschenmann Brooklyn—p 223
Gruskin Intra-dermal Test for Pregnancy E Schwartz Brooklyn—p 225
Modification of Beck's Low Flap Cesarean Section F A Kassebohm and M J Schreiber New York—p 229
Autotransfusion Review of American Literature with Report of Two Additional Cases C M Watson and J R Watson Pittsburgh—p 232
Pneumococcal Peritonitis Report of Five Cases R C Johnston New Kensington Pa—p 238
Spinal Anesthesia Procaine Concentration Changes at Site of Injection in Subarachnoid Anesthesia H Koster A Shapiro and A Leikensohn Brooklyn—p 245
Intravenous Iodine in Preoperative Treatment of Hyperthyroidism T B Jones Rochester N Y—p 249
Gastro-Ileostomy and Gastro-Ileac Ulcer B Kogut and E Stein Brooklyn—p 263
Analysis of 100 Consecutive Thyroidectomies L F Licht Richmond Hill N Y—p 270

Urea in Healing of Chronic Purulent Wounds—Robinson points out that, in an investigation of the means by which the healing effects of surgical maggots are produced in suppurating wounds of long standing, it was recently discovered that the purine derivative allantoin occurs in maggot excretions and stimulates healing in purulent wounds. Further study has shown that this is not the only substance with therapeutic properties present in maggot excretions. Urea the still simpler and well known product of protein metabolism has been found to produce similar healing effects. Interest was aroused in the possibility that urea might have healing characteristics through the picture presented by the structural chemical formula of allantoin. On hydrolysis, the side chain easily forms urea. The conception that allantoin is therapeutically active partly through its side chain led to the present investigation. Urea has been found to stimulate healing in chronic purulent wounds. The effects obtained are a cleansing of the wound by the removal of necrotic material and pyogenic bacteria present and a promotion of the growth of granulation tissue. Like allantoin, urea occurs in maggot excretions and its presence serves as a further elucidation of the remarkable efficiency of surgical maggots in healing chronic suppurating wounds. This healing action of urea probably accounts in part for the custom prevalent for centuries in Europe, Asia and Africa and also practiced in America of using urine to promote the cleansing and healing of wounds. Urea which is manufactured in enormous quantities for use as a soil fertilizer, is available for therapeutic use without any connection with animal excretions. It can be made from the three simple gases nitrogen hydrogen and carbon dioxide and is a pure white crystalline substance. In wound treatment a 2 per cent solution in water has been used on

saturated gauze dressings applied directly to the wound. The solution is bland, odorless and nontoxic. The treatment is inexpensive and easily given. Urea is present in the cells of all the tissues of the body, it rapidly permeates the membranes of the cells and its concentration in these rises and falls readily with that of the blood and lymph. In view of the remarkable cleansing and healing properties of urea in chronic purulent wounds it appears that the general conception of this material as only a waste product has tended to obscure its therapeutic character.

Lumbar Puncture in Head Injuries—Based on a study of the anatomy and physiology of the brain and on clinical experiences in a series of more than 500 cases of head injuries with study of necropsy material, together with a review of the literature on the subject, Shatara makes the following deductions: 1 The withdrawal of cerebrospinal fluid by lumbar puncture as a diagnostic procedure should be performed in every case of head injury after the patient has reacted from shock. The pressure should be recorded and the fluid collected in three tubes of about 5 cc in each. If the fluid is uniformly bloody in the three tubes if the supernatant fluid is xanthochromic after centrifuging and if the pressure is over 10-12 mm of mercury, a diagnosis of intracranial injury with probable brain laceration or contusion and hemorrhage can be made. If the fluid is clear but under increased pressure and if there is other corroborating evidence a diagnosis of traumatic cerebral edema can be made. If the fluid is clear and the pressure is normal, one is justified in ruling out an intracranial injury even in the presence of a fractured skull. 2 Lumbar puncture is a useful therapeutic procedure in cases of traumatic edema. The pressure should be reduced by half the excess above normal and the procedure repeated about every six to twelve hours until the pressure is normal. 3 When the fluid is bloody and under increased pressure no ill effects have been noted from repeated punctures, if the pressure is not reduced suddenly.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17: 481-544 (Aug.) 1936

- Development of Short Wave Therapy E Schliephake Giessen Germany—p 487
Fango Packs in Therapy H J Behrend New York—p 501
Temperature of Skin Surface W Bierman New York—p 504
Biology of Ultrashort Waves S Jellinek, Vienna Austria—p 512
*Cervicitis Five Years Experience with Diathermy M A Roblee St Louis—p 514
Further Studies of Endocervicitis Cervicitis and Erosions W E Ground Superior Wis—p 520

Cervicitis—Roblee points out that cervicitis is a condition of structural change in the cervix. It is produced by the gonococcus or by nonspecific pyogenic organisms which have gained a foothold because of trauma to the cervix. The erosion of the cervix is columnar epithelium extension replacing the squamous epithelium. The healed erosion of cervicitis is the squamous epithelium growing back over the columnar extension. This causes the racemose gland to become permanently blocked with a resulting hypertrophy of the entire cervix, and producing the picture of chronic cystic cervicitis. Whatever erosion exists at this stage depends on the completion of regrowth of squamous epithelium. If the columnar epithelium is piled up so that the squamous epithelium cannot replace it a papillary erosion with ectropion formation exists. The author emphasizes that the treatment for such a condition must be one of removal of this structural change. To patch it up so to speak means inviting trouble in later years. If the squamous epithelium has lost out in the erosion struggle and grown abnormally the entire cystic diseased gland bearing area must be destroyed and removed so that a single layer of squamous epithelium can line the newly constructed cervix and its canal. The Sturmdorff operation is designed for this end and accomplishes it effectively. It became the problem to apply this principle to the ambulatory patient. For the past five years various surgical diathermy procedures have been applied to ambulatory cases of chronic cervicitis in the outpatient department of the Washington University School of Medicine. These cases have been followed by its social service at three months for the first year after treatment and every four to six months thereafter. In this manner it has been determined how lasting a result has been obtained by the various

methods employed. The patients are selected from the general gynecologic clinic and referred to the cervicitis clinic. Here the chronicity is determined by the Schiller iodine stain and colposcopy and an attempt is made to rule out a definite malignant condition. Biopsies for study are taken, and the treatment is begun. No anesthetic is used in ambulatory cases. Sodium amytal or some other suitable barbiturate with scopolamine or small doses of morphine and scopolamine are used in cases that are hospitalized for twenty-four hours or longer. It has been felt that the knife probing depth removal has given more lasting results than the wire loop conization that cuts through the cystic area and improves the condition by drainage rather than actually removing all the cystic area by destruction. It appears that there is less tendency to immediate hemorrhage with the knife coagulation method as compared with conization, as no packing is ever used after the former procedure. For this reason the author has adhered to the knife coagulating method for ambulatory cases and favors a large wire loop removal for hospital cases for which the Sturmdorff operation has not been elected. The author employed surgical diathermy in the past five years in 350 cases of cervicitis. Of all cases treated, 86.61 per cent had an uneventful postoperative course and good result. Good end results were obtained in 94 per cent of all cases treated.

Archives of Surgery, Chicago

33 187-348 (Aug.) 1936

- Effect of Acetylcholine and of Physostigmine on Gastro-Intestinal Motility. Observations of Normal Animals and of Animals with Experimental Peritonitis. L. M. Zimmerman, R. Frank and H. Necheles. Chicago—p. 187.
- Allergy as Explanation of Dehiscence of Wound and Incisional Hernia. J. W. Hinton. New York—p. 197.
- *Ethylene Glycol and Magnesium Sulfate Paste in Treatment of Inflammatory Processes. J. W. Hinton. New York—p. 210.
- Arthritis and Injuries to Joints. D. H. Kling. Los Angeles—p. 213.
- Effects of Circulatory Disturbances on Structure and Healing of Bone Injuries of Head of Femur in Young Rabbits. G. H. Kistler. Boston—p. 225.
- Traumatic Arteriovenous Fistula Involving Right Femoral Artery and Vein. Spontaneous Closure. T. J. Dry and B. T. Horton. Rochester, Minn.—p. 248.
- *Surgical Treatment of Idiopathic Hypertrophy of the Breast. S. Fomon. New York—p. 253.
- Aneurysms of the Hand. V. C. David. Chicago—p. 267.
- Studies in Gastro-Intestinal Motility. T. S. Raiford and M. G. Mulinos. New York—p. 276.
- Variations of Cranial Venous Sinuses in Region of Torcular Herophili. B. Woodhall. Baltimore—p. 297.
- Review of Urologic Surgery. A. J. Scholl. Los Angeles. F. Hinman. San Francisco. A. B. Hepler. Seattle. R. Gutierrez. New York. G. J. Thompson and J. T. Priestley. Rochester. Minn. J. Verbrugge. Antwerp, Belgium and V. J. O'Connor. Chicago—p. 315.

Ethylene Glycol and Magnesium Sulfate Paste in Treatment of Inflammatory Processes.—Hinton shows that, in preparing an ethylene glycol-magnesium sulfate paste it is necessary to use about 60 per cent of magnesium sulfate and 40 per cent of ethylene glycol by volume. The exact proportion varies with the different preparations of magnesium sulfate. The ethylene glycol should be brought to a boil and the magnesium sulfate slowly added to the glycol preparation and thoroughly stirred until the solution becomes adherent to the stirring rod. Then it is transferred to an electrical mixer and kept in constant motion for from twenty to twenty-five minutes. A chemical change takes place when the two ingredients are mixed which is manifested by an elevation of temperature. The thick paste should be allowed to stand for ten days before it is used. The preparation should be stirred daily for five minutes during this period. The paste is of a semisolid consistency and can be applied thickly over the affected area and covered by a dressing. It is usually necessary to change the paste every eight hours in cases of severe cellulitis. In cases of localized infection such as a furuncle it can be applied and the area left uncovered. The paste should be put on at frequent intervals. The object in using this preparation is to have a medicament with hypertonic properties so that continuous osmosis will take place in the inflammatory area and by this means the infection will be localized and the edema relieved and as a result the pain greatly diminished if not entirely overcome. During the two year period that the preparation described has been used more than a hundred inflammatory conditions have been observed which have ranged from

simple furuncles to severe cellulitis with lymphangitis and even to furuncles of the upper lip and around the nares. The results have been most astounding in the severe type of cellulitis. Few severe infections the preparation has proved equally effective, and it has a definite field of application in the treatment of ordinary furunculosis or low grade infection. There are three reasons for using the ethylene glycol and magnesium sulfate paste: 1. It acts more rapidly than wet compresses of magnesium sulfate or other ointments. 2. It is more uniformly successful in arresting or localizing infections than other methods of treatment. 3. It acts continuously and therefore saves nursing care.

Surgical Treatment of Hypertrophy of Breast.—Fomon emphasizes that in each particular instance the surgeon must critically study the indication to determine whether operative intervention is justified; he must be especially cautious in view of the fact that spontaneous regression is possible. The desirability of the reconstruction cannot be left entirely to the whim of the patient, despite the minor character of the operative procedure. Before describing the operation, the author gives a brief description of the anatomy of the breast and then mentions the several varieties of idiopathic hypertrophy. Then he gives a detailed description of the technic of the operation. He shows a diagram by which the location of the new areola can be determined. Then he takes up the approach to the breast, its delivery, reduction, molding and fixation, the transplantation of the areola, the removal of the redundant skin and the dressing. The author concludes that, although the operation borders on being a major one, experience shows that it is well borne. Recovery is rapid, and the relief is great. Serious complications are rare, provided a sufficiently wide medial pedicle is left intact. The patient may sit up in bed on the third day. Every other stitch is removed on the fifth day, and by the eighth day all have been removed.

Bulletin of Neurol. Inst. of New York, New York

5:1-544 (Aug.) 1936. Partial Index

- Cerebrospinal Fluid in Vascular Diseases of Central Nervous System. E. D. Brewer and C. C. Hare. New York—p. 5.
- Sensory and Other Aspects of Multiple Sclerosis. R. M. Brickner. New York—p. 16.
- Neoplastic Cysts Communicating with Lateral Ventricles. I. Cohen. New York—p. 21.
- *Some Neurologic Syndromes Produced by Arsenic and Lead. L. H. Cornwall. New York—p. 28.
- Clinical Diagnosis of Tumors of Corpus Callosum. F. Cramer. New York—p. 37.
- Pathognomonic Encephalographic Sign of Subdural Hematoma. C. C. Dyke. New York—p. 135.
- Significance of Incomplete Homonymous Hemianopia in Brain Tumor. Study of Forty-Nine Verified Cases. T. H. Johnson. New York—p. 202.
- Differential Diagnosis of Parasagittal Gliomas and Parasagittal Meningiomas. C. B. Mason. New York—p. 218.
- Syndrome of Unruptured Aneurysm of Intracranial Portion of Internal Carotid Artery. J. M. McKinney, Teresa Acree and S. E. Seltz. New York—p. 247.
- Heredity in Diseases of Nervous System. B. Sachs. New York—p. 345.
- Migraine. Critique of Hypophyseal Theory. W. Timme. New York—p. 437.
- Angioblastic Meningiomas. Supratentorial Hemangioblastomas. A. Wolf and D. Cowen Jr. New York—p. 485.
- *Progressive Muscular Dystrophy. Group of Five Cases Presenting Peculiar Deformities. E. G. Zabritkie, C. C. Hare and M. V. Harn. New York—p. 526.

Neurologic Syndromes Produced by Arsenic and Lead.—In order to illustrate the relation of arsenic and lead to neurologic disease, Cornwall describes clinical observations on six cases. One patient developed locomotor difficulties following consumption of bootleg whisky. Another patient developed ataxia and weakness in all extremities. A third patient developed severe headaches as a result of ingesting wine that was found to contain large amounts of arsenic. The wife of this patient who had consumed wine from the same source developed locomotor difficulty, mental confusion and slurring speech. A fifth case represents a myeloradiculitis due to intoxication by arsenic or lead or both derived from home brewed beer. The last case described is another example of headache as the most prominent symptom. Individual tolerance to the metals is subject to wide variation. Pathologic damage usually results from the retention of the metals in the tissues. Their presence in the blood indicates that they have been released from the

tissues and are in a mobile state. The urinary content indicates merely the amount that is being eliminated at the particular time the specimen is collected. Absence of metals from the urine may mean nothing unless the patient is receiving eliminative therapy at the time the specimen is collected. The quantities in both the blood and the urine may be high at a time when the clinical symptoms are regressing or even after they have been completely relieved. Except in dermatologic conditions it is speculative as to how much significance, if any, can be attached to the quantities found in the hair or the skin. Both tissues may be functioning merely as storage reservoirs where the metals reside in an inert state. When clinical symptoms are present, which may be attributable to metallic retention, mobilization and excretion are usually followed by clinical improvement. The author believes that this is always true in the case of arsenic. When the carbon dioxide content of the blood reaches 70 volumes per cent a refixation of arsenic in the tissues may result and produce an accentuation of symptoms. When this occurs however the urinary excretion is diminished. The situation is somewhat different with lead, and too rapid mobilization may accentuate the initial symptoms or produce additional ones such as gastro enteritis. In such cases immobilization of the metal is indicated and this may be accomplished by the administration of calcium in the diet, by mouth or intravenously. Diarrhea and colic are the commonest acute symptoms due to lead and they can usually be promptly relieved by the intravenous administration of calcium chloride or calcium gluconate. Tincture of belladonna by mouth is also of value. Whereas elimination of lead is thought to be accomplished best by acidification with ammonium chloride or phosphoric acid and a low calcium diet thereby creating a negative calcium balance similar results may be obtained though probably less effectively by the administration of alkalis. Viosterol parathyroid extract and potassium iodide also induce its elimination. In the cases recited sodium thiosulfate was effective in promoting the excretion of both arsenic and lead. In order to assure the best result the sodium thiosulfate should be freshly prepared by dissolving 1 Gm of the crystalline substance in 10 cc of sterile freshly distilled water.

Progressive Muscular Dystrophy—Zabriskie and his associates point out that in a selected group of patients suffering from primary muscular dystrophy who were studied to determine the effect of aminoacetic acid on the metabolism and its therapeutic value Harris called attention to the striking deformity of the mandible in two of the members of the group who happened to be brothers. Further investigation revealed other peculiarities in the clinical picture and it became apparent before long that five patients in the group presented a combination of three distinctive clinical signs which the authors had never encountered together before. The triad referred to consists of (1) contractures appearing early in the course of the illness and involving the larger joints (2) a pseudohypertrophy of the anterior tibial muscle group with great loss in motor power, (3) a deformity of the mandible which exhibits a very wide angle, a malocclusion of the front teeth and a wide spacing of the lower front teeth. The authors describe the histories of these patients and reproduce photographs showing the deformity of the mandible. They also discuss the metabolic data and the x-ray studies.

Iowa State Medical Society Journal, Des Moines

26 451 498 (Aug.) 1936

- Diseases of Petrous Portion of Temporal Bone from Standpoint of the General Medical Man, the Neurologist and the Otolaryngologist S J Kopetzky New York—p 451
- Applied Anatomy of Deep Suppurations of Neck E W Scheldrup Iowa City—p 455
- Systemic Management of Children with Infections of Nose Throat and Ear D H Kelly Des Moines—p 460
- Stuttering Research Findings and Their Therapeutic Implications W Johnson, Iowa City—p 464
- Full Frequency Audiometer J E Reeder Sioux City—p 469
- Methods of Diagnosis and Treatment in Allergic Disease Julia Cole Iowa City—p 469
- Allergic Manifestations in General Practice E G Sents Davenport—p 472
- Tumors of Scapula Osteoma with Report of Case J A W Johnson Newton—p 476
- Acute Hemorrhagic Pancreatitis T P McNamara Dubuque—p 478

Journal of Lab and Clinical Medicine, St Louis

21 1105 1216 (Aug.) 1936

- Reliability of Fermentation Tests in Identification of *Monilia* E W Hopkins and H C Hesseltine Chicago—p 1105
- Cultural and Morphologic Studies of *Cryptococci* and *Monilia* Isolated from Vulvovaginitis and Oral Thrush E W Hopkins and H C Hesseltine Chicago—p 1113
- Further Studies on Copper and Iron in Metabolism H L Keil and V E Nelson Ames Iowa—p 1119
- Value of Biopsy J M Neely Lincoln Neb—p 1124
- Does Calcium Neutralize Thyroxine? C A Hellwig Wichita Kan—p 1131
- Administration of Epinephrine by Inhalation J B Graesser and A H Rowe Oakland Calif—p 1134
- Production of Basophilia of Granules of Polymorphonuclear Neutrophilic Leukocytes in Experimental Infection of Rat M Francis Xavier O'Reilly Ann Arbor Mich—p 1137
- Blood Sugar Level After Prolonged Carbohydrate Feeding M Caroline Hrubetz, New York—p 1142
- Relation of Nonfilament and Filament Counts During Excitement H L Katz and L B Nice, Columbus Ohio—p 1145
- *Simple Treatment for Psoriasis J Krafka Jr Augusta Ga—p 1147
- Sources of Error in Laboratory Diagnosis of Amebiasis W DeYoung Chicago—p 1149
- Aminopyrine and Circulating Leukocytes Effect of Prolonged Administration on Number and Type of White Blood Cells S D Simon Cincinnati and M H Metz Dallas Texas—p 1154
- Fatal Case of Tularemia Pneumonia with Associated Ileitis Clinical and Pathologic Report G H Fetterman and H Lerner Mayview Pa—p 1157
- Cause and Significance of Electronegativity of Active Living Tissue W E Burge O S Orth H W Neild R Krouse and G C Wiel wire Urbana Ill—p 1162
- Some Observations on Gastric Anacidity in Relation to Gastroduodenal and Colonic Floras and an Associated Anemia J C Torrey and M Lake New York—p 1170
- The Age of Sexual Maturity in 250 Albino Female Rats (Mus Norvegicus Albicus Wistar Strain) R H Rigdon Durham N C—p 1182
- Study of Nonspecific Reactions of Cerebrospinal Fluids with Bordet and Ruelens Antigen in Complement Fixation Test for Syphilis E L Hazen and A Greenspan New York—p 1185
- Ide Test New Color Test for Syphilis S Ide and T Ide Tokyo Japan—p 1190
- Convenient Food Cup for Rats W D Callup Stillwater Okla—p 1194
- Interference of Nitrites in Detection and Estimation of Urobilinogen in Urine E H Bensley Montreal—p 1195
- Microdetermination of Sodium by Uranyl Zinc Acetate Method and Titration of Uranium with Cadmium as Reductant G Chen Peiping China—p 1198
- Modification of Wright's Technique for Determination of Opsonic Index W H Crane and J L Brakefield Birmingham Ala—p 1203
- Control of Mange in Laboratory Dogs F W Kinard and J van de Erve Charleston S C—p 1205
- *New Microreaction for Serodiagnosis of Syphilis Adaptation of Kahn Standard Antigen A R Casili Elizabeth N J—p 1204
- Staining Technique for Blood in Spinal Fluid Method to Differentiate Between Recent and Old Hemorrhage J Q Griffith Jr Ella Roberts and W A Jeffers Philadelphia—p 1208

Simple Treatment for Psoriasis—Krafka observed that in the South psoriasis often clears up to some extent during exposure to the summer sun. This led him to the hypothesis that it might be cured with viosterol. A trial test was made of the hypothesis. A patient with a case of ten years' standing continuous duration was put on a routine treatment of viosterol two gelatin capsules containing 3 minims (0.2 cc) each of halibut liver oil with viosterol daily. Within sixty days from the beginning of the test, the skin of this patient was entirely clear. The author describes two other cases of psoriasis in which he obtained favorable results with viosterol medication. He admits that observations in only three cases do not permit definite evaluation. He says that if the treatment were at all hazardous or difficult he would not presume to lay it before the profession but that in view of the simplicity of the method he thinks it should be put to a trial.

New Microreaction for Serodiagnosis of Syphilis—Casili presents a simple adaptation of the Kahn antigen for slide agglutination. The antigen is prepared and titrated exactly according to the instructions given by Kahn. After the antigen salt mixture precipitate has been standing for half an hour although ten minutes will be sufficient the mixture is centrifugated at high speed for approximately ten minutes. This last step constitutes the first modification. The clear supernatant alcoholic salt solution is carefully decanted off. A clean piece of soft white cloth is inserted into the tube down to but not touching the mush at the bottom, so as to absorb as much as possible of the alcoholic salt solution.

remaining. This mush is a yellowish white, iodized oil, cholesterolized mixture, and it is this substance which is used in the test. This separation of the antigen mush from the alcoholic salt solution constitutes the second and really significant modification. Now there is placed on three clean slides, previously labeled known positive, known negative and unknown, 0.1 cc. of the inactivated serum corresponding to the label. A smaller amount of inactivated serum can be used with equally good results. One loopful of antigen mush is then added to each of the serums and with the same loop emulsified until no visible particles remain. A thin platinum wire loop 0.5 mm. in diameter is used and is sterilized in the flame and allowed to cool before each loopful is taken. This procedure may be continued for as many unknown serums as desired, but the author feels that five unknown serums is the maximum number advisable. Clumping almost immediately follows emulsification in the positive serums; the negative ones remain milky and homogeneous. For weaker positive serums a minute may elapse before clumping is observed. The results are read with the naked eye and are best observed with reflected light from below. The observation should not exceed five minutes and clumping is facilitated by occasional gentle tilting of the slide back and forth. Reading should be made as strongly positive, weakly positive and negative, although with added experience more quantitative readings are not, as a rule, difficult.

Journal of Pediatrics, St. Louis

9: 149-278 (Aug.) 1936

- Treatment of Nineteen Cases of Typhoid Fever in Children. Report on Importance of Nonspecific Immunotransfusion Therapy. K. Habel and W. J. Crocker. Philadelphia.—p. 149.
- Dysentery Bacillæmia. P. E. Rothman. Los Angeles.—p. 167.
- Scleroderma. Report of Case with Sclerodactylia and Hemiatrophy. R. H. McCrackin. Edeia. Cameroun. West Africa.—p. 173.
- Technics for Measuring Infants. Helen I. Dawson. Iowa City.—p. 187.
- Tuberous Sclerosis. Encephalographic Interpretation. R. N. DeJong. Ann Arbor. Mich.—p. 203.
- Pediatric Diagnosis. W. C. Davison. Durham. N. C.—p. 209.
- Omphalitis in the New Born. J. W. Chamberlain. Boston.—p. 215.
- *Influence of Breast and Artificial Feeding on Infantile Eczema. C. G. Grulee and H. N. Sanford. Chicago.—p. 223.
- *Capillary Resistance Test and Its Relation to Vitamins C and D. C. B. Weld. Toronto.—p. 226.
- Rheumatic Involvement of Appendix. A. T. Martin and S. L. Ellenberg. New York.—p. 234.
- Treatment of Gonorrheal Vaginitis in Childhood with Estrogenic Substances. Margaret A. Limper and Ethel E. Hieronymus. Louisville. Ky.—p. 240.

Influence of Breast and Artificial Feeding on Infantile Eczema.—Grulee and Sanford point out that although infantile eczema has received much attention in recent years, the effect of diet on these infants, once so stressed, has been largely lost sight of recently. For this reason the authors studied 20,061 babies. An infant was considered suffering from infantile eczema if there were any lesions on the face or body at the time of examination. This does not include 'cradle cap'. None of these infants received any treatment except the discontinuance of soap and water to the skin and the use of olive oil only for cleansing purposes. None of the feedings were changed in any way. In the artificially fed infants 1½ ounces of boiled cow's milk and one-tenth ounce of cane sugar per pound of body weight were used. In all infants cod liver oil, orange juice, cereals and vegetables were added to the diet. The authors found that the general incidence of infantile eczema is lowest in the breast fed infants. In the partially breast-fed it is twice as frequent as in the breast-fed infants, and in the artificially fed infants seven times as great. In the monthly incidence both those infants entirely breast fed and those partially breast fed show an increase to the sixth month and then a rapid decrease through the ninth month. The artificially fed infants continue to show an increase until the eighth month and only a slight decline in the ninth month. In the seasonal incidence all groups are increased in the winter and spring and decreased in the summer and autumn.

Capillary Resistance Test and Its Relation to Vitamins C and D.—Weld says that among the various manifestations of scurvy the hemorrhagic tendency has been suggested as that most useful for detecting latent or subclinical cases. The hemorrhages are due to an increased permeability of capillaries and several workers have suggested the use of the capillary resistance test to diagnose latent scurvy. The author

mentions a number of these tests and he hoped that some such method might be useful in detecting early or mild cases of vitamin C deficiency and hence be of service in determining the optimal vitamin C content of the diet. He first applied Dalldorf's technic, in which the lowest degree of suction necessary to produce any petechiae, in a cup 1 cm. in diameter applied to the skin of the outer aspect of the upper arm for one minute, determines the threshold, to a group of normal individuals. This consisted of members of the laboratory staff and convalescent patients in the hospital. The ages of the children ranged from 4 to 14 years, the infants being under 2 years of age. All were receiving adequate amounts of vitamin C in the diet. In the cases of the infants the skin of the abdomen was used instead of that of the upper arm, though in several instances the arms were tested as well with similar results. The author obtained a great variation in responses. He observed that young children tend to have a higher resistance than older children or adults. No improvement in the capillary resistance following administration of tomato juice was observed in a group of eighty adults. These were in an institution, their diet was well controlled and it was one low in vitamin C. Several children suffering from scurvy or known to have had no source of vitamin C for weeks were found to have normal resistances. In ten of eleven subjects viosterol in moderate doses or irradiation with an ultraviolet lamp promptly raised the capillary resistance. From these observations the author concludes that the capillary resistance determination is not a useful means of determining the state of nutrition with regard to vitamin C. Vitamin D is a more effective agent than vitamin C in increasing the capillary resistances.

Kentucky Medical Journal, Bowling Green

34: 321-384 (Aug.) 1936

- Sterility in the Male. C. S. Noorman. Louisville.—p. 324.
- Sterility in the Female. C. W. Hibbitt. Louisville.—p. 328.
- Sterility from the Point of View of the Endocrinologist. W. O. Johnson. Louisville.—p. 331.
- Surgical Treatment of Retinal Detachment. A. O. Pfingst and C. D. Townes. Louisville.—p. 338.
- Immediate and Secondary Treatment of Eye Injuries. W. Dean Lomax. Louisville.—p. 340.
- Monocytic Leukemia. Case Report. M. I. Garon. Louisville.—p. 346.
- Early Kentucky Medical Literature. E. C. Hume. Washington. D. C.—p. 349.
- What the Physician Should Know About Periodontal Diseases. E. D. Rose. Memphis. Tenn.—p. 367.
- Urinary Tract Injuries. Diagnosis and Treatment of Injuries of Urinary Tract. S. C. McCoy. Louisville.—p. 374.
- Id. Injuries to Ureters. Report of Case. J. R. Stites. Louisville.—p. 378.
- Id. Injuries to Genito-Urinary Tract. Case Report. J. A. Bower. Louisville.—p. 380.
- Id. Injury to Kidney. E. S. Frazier. Louisville.—p. 381.
- Erysipelas. Report of Case. A. A. Richardson. Williamburg.—p. 383.

Laryngoscope, St. Louis

46: 569-646 (Aug.) 1936

- Otolaryngologic Case Reports. I. Laryngeal Conditions. J. J. MacLean. Brooklyn.—p. 569.
- Id. II. Mastoid Conditions. R. J. Gaffney. New York.—p. 574.
- Id. III. Parapharyngeal Infections. E. E. Baker. New York.—p. 578.
- Id. IV. Esophageal Conditions. A. Negro. New York.—p. 588.
- Id. V. Malignancies of Ear, Nose and Throat. F. M. Pullen. J. M. Lore. New York.—p. 592.
- Impacted Dental Plate in Larynx. Removal by Suspension. F. L. Myers. St. Louis.—p. 598.
- Thrombophlebitis of Jugular Bulb and Lateral Sinus of Venous Origin. Important Ear Findings. Report of Three Cases. S. Reen. New York.—p. 602.
- Id. II. Origin and Extension from Throat Infections. I. P. (unintelligible). New York.—p. 604.
- Id. III. Retrograde Extension to Jugular Bulb and Lateral Sinus. Diagnosis and Management. J. L. Maybaum. New York.—p. 610.
- Acoustic Tumors Within Internal Auditory Meatus. E. P. Fowler Jr. New York.—p. 616.
- *Craniocervical Movement and Muscle Strength. S. M. Weiss. Bronx, N. Y.—p. 628.
- Milk Injection for Pharyngeal and Laryngeal Infections. W. C. Deason. New York.—p. 642.

Craniocervical Movement and Muscle Strength.—Weiss grows shows that manipulations of the head and neck in the diagnosis and treatment of disorders of the upper respiratory tract all call for a better understanding not only of the respiratory mechanisms but also of movement and muscle strength.

craniocervical neuromuscular apparatus. Except for the cephalogyric paralysis that occurs as part of the syndromes of Schmidt and Jackson and the occasional references to the nuchal musculature in the elicitation of the tonic neck reflexes, little attention has been paid by the neurologist to the cephalocervical region. The craniocervical movements and muscle strength are particularly affected in lesions that involve the supranuclear motor representations of the lower cranial nerves. When the head of the patient opposes the examiner's hand in the anterior aspect, the patient's chin rotates toward the hemiplegic side and contralateral to the lesion. Head movements that occur in irritative and destructive lesions of the brain should be explained on the basis of the function of the craniocervical system. A case with a Notnagel syndrome is presented to show the effects of an extrapyramidal lesion on the function of the craniocervical structures. The disturbances in movement and muscle strength of the craniocervical apparatus are furthermore illustrated in multiple vascular lesions of the pons and medulla and compared with the reactions obtained in encephalitic involvements of these regions. Different reactions were obtained in cervical spinal diseases depending on the columns affected. Thus in disease of the anterior horn associated with a case of syringomyelia a different response was elicited from that noted in a case of multiple sclerosis. In a case of multiple sclerosis a clockwise and counterclockwise unilateral head clonus the first one to be presented in the literature, was observed. Lesions of the peripheral cervical nerves produce a much more circumferential and diffuse muscle weakness than that resulting from the localized intracranial unilateral lesions. They also differ distinctly from the effects on selective nuchal muscle groups as encountered in encephalitis. Cases of torticollis myositis or cervical osteoarthritis can be differentiated from the craniocervical disturbances of the preceding groups by palpation, local tenderness and other observations.

New York State Journal of Medicine, New York

36 1135 1192 (Aug 15) 1936

- Recent Advances in Clinical Cystometry by Means of Microcystometer Studies in Bladder Function III I Simons and W Bisher New York—p 1135
Late Results in Sixty Three Cases of Poliomyelitis Treated in Respirator M B Bradhy Mount Vernon—p 1147
Treatment of Bronchial Asthma by Intratracheal Injections of Iodized Oil W Anderson Pittsburgh—p 1151
Ergot and Ergotamine Tartrate for Puerperal Prophylaxis J E Tritsch New York—p 1160
Outbreak of Cowpox Caused by Vaccination Involving Two Families and Two Herds of Cattle S W Sayer Gouverneur and F B Amos Albany—p 1163
Between Mental Health and Mental Disease B Liber New York—p 1165

Southern Surgeon, Atlanta, Ga

3 255 330 (Aug) 1936

- *Passive Vascular Exercises in Treatment of Obliterative Vascular Disease O P Board Birmingham Ala—p 255
Tumors of Trachea C Jackson Philadelphia—p 263
Acute Peritonitis Some Causes and Treatment A Street Vicksburg Miss—p 277
Surgery in Treatment of Pulmonary Tuberculosis C D Whelchel Gainesville Ga—p 285
Neoplasms of Rectum Incidence Interrelationship and Diagnostic Criteria C Rosser Dallas Texas—p 290
Therapeutics of Lymphogranuloma Inguinale E von Haam New Orleans—p 298
Perforation of Primary Jejunal Ulcer D P Hall Louisville Ky—p 309

Passive Vascular Exercises in Obliterative Vascular Disease—After presenting a classification of the peripheral vascular diseases Board gives his attention to the primary organic diseases of the arteries the primary vasomotor disturbances being disregarded. He points out that the symptoms are due to lessened blood supply to the tissues of the affected extremity. Subjective coldness is often a prominent symptom of organic arterial disease. The objective signs are of greater importance than the patient's symptoms in arriving at a diagnosis. They are absence or decrease in pulse lowering of surface temperature and color changes in the affected extremities with ulceration and gangrene in the late stages. As a rule the foregoing signs can be elicited by palpation and inspection. The oscillometer thermocouple and roentgen rays are

helpful. The principal objective in the treatment is the reestablishment of an adequate collateral circulation and the relief of pain. While operations on the sympathetic nervous system have been helpful, when vasospasm predominates they have been disappointing in the obliterative diseases. It is true that often vasospasm plays a part in organic disease, but relieving the spasm does not affect the obliterative changes in the vessel walls. It is not logical to subject a patient to a formidable operation, such as ganglionectomy, to relieve a minor part of the cause of his circulatory failure. The older conservative treatments of improving collateral circulation by physical methods and active exercises have been beneficial but the improvement has been of short duration. Startling advances in the conservative treatment of obliterative vascular disease have been made since the report of Herrmann and Reid in 1933 on the results obtained by the use of passive vascular exercise. The apparatus consists of a motor driven pump and a glass chamber into which the extremity is placed. The glass boot is fitted snugly about the thigh or arm by a soft rubber cuff and the boot is connected with the pump by means of a rubber tube. The machine runs automatically and is capable of producing any strength of negative and positive environmental pressure at any selected rate of alternation. Usually 80 mm of mercury negative and 20 mm of mercury positive pressure have been found the most beneficial, and the rate of alternation is one complete cycle in about fifteen seconds. The treatment varies in frequency and length but on the average is from two to five hours daily. Approximately sixty to 100 hours is necessary to develop an adequate collateral circulation in patients with obliteration of major or secondary arteries. The most striking results have been obtained following the ligation of a large artery or its occlusion by emboli or thrombosis. Pain is usually relieved in a few hours treatment and in the majority of cases amputation has been avoided. Frozen feet have responded promptly if intensive treatment is instituted before complete obliteration of the arterioles has taken place. In arteriosclerosis with or without diabetes, passive vascular exercise has been an efficient means of overcoming the ischemia of the extremity. Pain is relieved and trophic ulcers usually heal rapidly. Threatened gangrene may be aborted and small areas of dry gangrene may be made to demarcate with minimum loss of tissue. However, the author emphasizes that passive vascular exercise is not a cure all and that the older conservative methods of treatment that have proved to be of value should not be neglected.

Treatment of Lymphogranuloma Inguinale—On the basis of the etiology and the pathology of lymphogranuloma inguinale von Haam analyzes the various methods of treatment. He thinks that surgical removal of the bulk of infected glands, which constitute dangerous foci for the further spread of the disease can be recommended. The curative effects of partial adenectomy is demonstrated by study of a series of cases so treated. The hopelessness of any type of therapy in the chronic forms of the disease esthiomene and inflammatory stricture of the rectum are emphasized and explained on the basis of the character of the pathologic lesions encountered in these conditions.

Tennessee State Medical Assn Journal, Nashville

29 293 336 (Aug) 1936

- Diagnosis and Operability of Carcinoma of Stomach R L Sanders Memphis—p 295
General Paresis Report of Case K S Howlett and W T Roth Jr Franklin—p 303
Physical Therapy in Chronic Rheumatic Diseases J S Coulter Chicago—p 309

Wisconsin Medical Journal, Madison

35 593 684 (Aug) 1936

- Aleptic Necrosis of Head of Femur F A Chandler Chicago—p 609
Water Balance of Sick Patients F A Collier Ann Arbor Mich—p 618
The Otolaryngologist Looks at the Law W E. Grove Milwaukee—p 624
Ambulant Treatment of Hernia A H Knudson Milwaukee—p 627
Development of Cataract Following Use of Dimetrophenol R T Rank and E A Waldeck Milwaukee—p 629
Pneumococcus Meningitis Report of Case with Recovery J F Bennett and H J Meier Burlington—p 630
Mucocele of Appendix Case Report A Jackson Madison—p 633

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 269 320 (Aug. 8) 1936

Surgery of Pulmonary Tuberculosis. Main Principles. J. Gravesen—p. 269

Rational Pneumothorax Treatment. G. T. Hebert—p. 272

Diet in Relation to Physical Efficiency. G. E. Friend—p. 276

Rationale of Free School Meals. E. H. M. Milligan—p. 278

*Paralysis Due to Posture. E. B. Clayton—p. 280

Paralysis Due to Posture—Clayton presents cases of nerve paralysis, which are apparently due to pressure during the maintenance of some posture. He describes cases of paralysis of the anterior tibial, the axillary, the ulnar and the radial nerves. An effort was made to discover to what extent minor cases of pressure paralysis occur that do not last a sufficient time to require treatment. Inquiries from hospital outpatients showed that the foot may 'go dead' on crossing the knees and that the hand or occasionally the whole arm may 'be dead' on waking in the morning. This 'deadness' clears up quickly on movement. In many cases it occurs only occasionally. The author thinks that some of these cases can be explained as *perineuritis with added pressure*. A few may be due to pressure only. It seems likely that in the others fatigue, cold and damp weather, or a septic focus may have been the predisposing cause.

Lancet, London

2 237 296 (Aug. 1) 1936

Glycogen and Metabolism of Carbohydrate. F. G. Young—p. 237

Obscure Chronic Pain in Right Flank with Reference to Diagnostic Analgesia. C. J. Marshall—p. 242

Uveoparotid Tuberculosis. F. Gamm and R. S. Illingworth—p. 245

*Changes in Blood Pressure on Descent into Mines with Especial Reference to Miners' Nystagmus. F. O. Sullivan—p. 247

Perforated Peptic Ulcer. H. Bailey—p. 249

Oxygen Tent. Note. D. C. Reavell—p. 250

Changes in Blood Pressure on Descent into Mines—It was O'Sullivan's object to discover whether recurrent changes in blood pressure, caused by descent into mines play any part in the etiology of miners' nystagmus. Twenty-five healthy miners were examined before and after descent and a rise of systolic pressure was found in all of them (about 20 mm of mercury in two, 15 mm in four, 10 mm in eight, and 5 mm in eleven). In fourteen there was also a rise in pulse pressure. An hour after the descent the systolic pressure was still raised in five of the men, and slight transient oscillations of the eyeballs could be observed in all of these especially when they stooped. In four of these five cases of latent nystagmus the systolic pressure had risen more than 10 mm. Similar observations were made on twenty-five men suffering from miners' nystagmus and in this group the rise in systolic pressure after descent was more conspicuous (19 mm of mercury in one, 15 mm in eight, and 10 mm in the other sixteen). An hour afterward as many as fifteen still had raised systolic pressures. All twenty-five showed a rise of pulse pressure on descent. These results suggest that men who have nystagmus are also relatively susceptible to changes in blood pressure on descent. Though by no means conclusive they accord with the theory that repeated rises in pressure caused by descent into mines play a part in the etiology of miners' nystagmus.

Medical Journal of Australia, Sydney

2: 69 102 (July 18) 1936

Some Aspects of Intracranial Surgery with Especial Reference to Meningiomas. H. R. Dew—p. 69

*Some Disturbances of Circulatory System Due to Pneumonia and Other Toxic Conditions. E. F. Gartrell—p. 76

Sequels of Cerebral Injuries Due to External Trauma. T. Hamilton—p. 81

Human Psittacosis in Australia. F. M. Burnet and J. Macnamara—p. 84

Disturbances of Circulatory System Due to Pneumonia—Gartrell discusses the toxic effects on the circulatory system of such diseases as pneumonia, influenza, typhoid and typhus fevers and hyperthyroidism. The prime factor is the toxin, which may poison both the heart itself and the peripheral

vascular field, the latter effect being probably the more important. Even in the absence of myocardial damage, serious injury may be inflicted on the capillaries and arterioles. The mechanical factors in the causation of failure of the heart include capillary stasis in the diseased lung tissue, interference with respiration, fever, cough and emotional disturbance. Important as these factors may be, the normal heart has sufficient reserve to cope with the extra strain, but if the myocardium is damaged by the toxin or hampered by pre-existent cardiovascular disease, the mechanical factor may be the last straw precipitating cardiac failure. Peripheral failure is a condition akin to shock in which the walls of the small peripheral vessels are so damaged by the toxin that they lose their tone and dilate, with the result that the venous return to the heart becomes inadequate for the maintenance of the circulation. In the majority of patients the damage is not so severe. If venous congestion occurs or if the right side of the heart dilates, venesection to the extent of not less than 12 ounces (350 cc.) is indicated. If there is much anoxemia, oxygen should be given continuously day and night, at the rate of 2 liters per minute, for in some cases anoxemia is a factor in precipitating cardiac failure. The routine administration of digitalis is advocated by some and deprecated by others. The physician must remember that peripheral failure is more common than myocardial failure. Therefore it is in only a limited number of cases that there is any scope for its beneficial action. In the remainder it is tantamount to adding yet another poison to a system already beset by toxins. Rest, obtained by adequate doses of morphine if necessary, is an essential part of treatment. In pneumonia even apart from peripheral failure, the skin capillaries contain a great deal of blood. It is easy to see why hydrotherapy meets with some measure of success in cases of peripheral failure because it reduces the temperature and at the same time constricts the terminal vessels, so helping the peripheral circulation. Camphor appears to withdraw blood from the skin but its tendency to dilate the heart does not enhance its popularity. Alcohol is distinctly contraindicated. Epinephrine is of great value, for it not only causes constriction of the small arterioles but also increases the force of the heart's contraction and dilates the coronary vessels. However, when the toxic damage to the walls is sufficiently severe, even epinephrine fails. Solution of posterior pituitary may be given in addition to epinephrine in doses of 1 cc. subcutaneously every twelve hours, because its action is more prolonged. Unfortunately it tends to dilate the heart and to constrict the coronary vessels. Therefore it must be ascertained that the myocardium is practically unimpaired before throwing on it the extra strain. Strychnine is of value chiefly during convalescence.

Japanese Journal of Gastroenterology, Kyoto

8: 59 120 (June) 1936

Experimental Studies in Metabolism of α -Mono-Iodine Benzene Acid. S. Sasaki—p. 59

Experimental Studies on Influence of Seasons on Pigment Excretion Function of Liver. R. Kawakatsu—p. 80

Influence of Aliphatic Alcohols on Pigment Excreting Function of Liver and Kidneys. I. Effect of Ethyl Alcohol. Y. Iida—p. 93

Contributions to Knowledge of Genesis of Gallstones. Experimental Study in Rabbits in Cases of Administration of Excess of Irradiated Ergosterol. S. Hamanaka—p. 103

Japanese Journal of Obstetrics & Gynecology, Kyoto

19: 77 174 (March) 1936

Appearance of Reticulated Cells in the New Born. In Addition to Relationship to Icterus Neonatorum. H. Fujimori and M. Nagai—p. 78

Experimental Results with Hakulan. Preparation Made on Pa. 1. Foam Treatment for Flow. H. Fujimori and M. Natsume—p. 83

Female Sexual Hormones and Malignant Tumors. Y. Nitta—p. 85

Separation of Retina Complicating Kidney of Pregnancy. Case. J. Ozaki, M. Oshima and T. W. Yun—p. 110

Spina Bifida Diagnosed During Pregnancy. Case. Y. Yamada and T. W. Yun—p. 119

Pregnancy in Rudimentary Horn of Uterus. Case. T. W. Yun—p. 124

Development of Cancers in Corpus Uteri, Cervix Uteri and St. and an Ovarian Cyst with Intervals of Few Years. Case. T. W. Yun—p. 130

Histologic Study of Peripheral Nerve in Human Femur. Case. Y. Nitta, Y. Nitta and M. Ozaki—p. 137

Paris Medical

2: 105 116 (Aug 15) 1936 Partial Index

- Hemiplegia with Concomitant Unilateral Amaurosis in Cardiac Patient
C I Urechia and L Dragomir —p 105
- Artificial Respiration Silvester Method C J Mijneff —p 106
- *New Treatment of Diphtheritic Paralysis P Dodel and A Foucher —
p 110
- Clinical Value of Counting Tubercle Bacilli in Sputum G Olivier —
p 114

Treatment of Diphtheritic Paralysis—Consideration of the mechanism of diphtheritic paralysis led Dodel and Foucher to ask whether the neurotoxic toxin fixed by the cellular lipoids could not be displaced by another neurotoxin with strong affinity for the nervous lipoids. For these theoretical reasons they investigated the possibility of displacing the combination of the diphtheritic toxin with the nervous system lipoids by means of chloroform administered orally. This therapy they attempted by administering from 30 to 60 cc of saturated chloroform water diluted in syrup. The method was applied in eleven cases of diphtheritic paralysis. The results were good and though spontaneous recovery may occur following such paralysis, the authors point out that in five of their cases the paralysis were of serious nature. Two of their patients died of pulmonary complications existing at the time the treatment was instituted. In one case, however, the preventive administration of chloroform water did not prevent the appearance of paralysis. Although the therapeutic value of the procedure is still somewhat uncertain, the authors believe that they have proved that the ingestion of chloroform water is without danger.

Presse Medicale, Paris

44 1289 1304 (Aug 12) 1936

- Functioning of Kidney in Cardiac Patients. L Langeron M Paget and
G Fruchart —p 1289
- *Treatment of Ozena by Acetylcholine. Z Chérédjian and T Sciclounoff
—p 1290

Treatment of Ozena by Acetylcholine—Chérédjian and Sciclounoff review various theories on the cause of ozena. The theory that they support is the so called endocrine-sympathetic and sympathetic-parasympathetic theory. Many investigators have attempted to develop a rational therapy based on this theory of causation, but few have attempted treatment with acetylcholine. The vasodilating action of this choline derivative is more intense at the skin level weaker at the splanchnic and kidney level, and absent at the level of the lungs. In the cases reported by these observers the acetylcholine was absolutely pure. It was given usually by hypodermic injections and rarely intravenously. The injections were absolutely painless and the single physiologic effect observed was that of dilatation of the retinal artery. Of the three men treated by this means one recovered one improved and one failed to improve. Of the six women treated four recovered and two improved. The authors conclude that this is a promising method of treatment and they suggest that the failures may be due to a hypocalcemia and that the artificial production of hypercalcemia in these patients might facilitate or reinforce the action of the acetylcholine.

Revue Méd-Chir des Maladies du Foie, Paris

11 257 336 (July Aug) 1936

- Variations in Relations of Cholesterol Esters to Total Cholesterol in
Hepatic Disease G Laroche and A Grigaut —p 257
- Serum Lactogification in Hepatic Disorders W Kojaczewski —p 270
- Hepatobiliary Semeiology of Insomnia G Parturier —p 287
- Hepatobiliary Semeiology of Drowsiness G Parturier —p 302
- Hepatobiliary Semeiology of Pruritus G Parturier —p 313

Cholesterol Esters and Total Cholesterol in Liver Disease—In comparing the relations of cholesterol esters to total cholesterol Laroche and Grigaut use the method previously described by Grigaut in determining the quantity of cholesterol esters. The colorimetric method of Liebermann was used for determining the total cholesterol in the blood serum. Investigation of these ratios in patients with various diseases convinced the authors that the diminution in the amount of cholesterol esters and the lowering of the cholesterol ester-total cholesterol ratio is an index of hepatic insufficiency. In the cirrhotoses the quotient is normal but it is well known that biologic tests usually fail to identify parenchymatous lesions. The cases in which the quotient was especially lower were those of subjects affected with secondary hepatic jaundice or severe terminal

icterus. The change in the quotient in xanthomatous subjects previously treated by irradiation of the liver furnished a powerful argument in favor of the hepatic site of esterification. Finally, experimentally in the dog, phosphorus intoxication appears to produce a moderate lowering of the quotient. These clinical therapeutic and experimental facts agree and demonstrate the hepatic site of the formation of cholesterol esters.

Helvetica Medica Acta, Basel

3 331 504 (Aug) 1936 Partial Index

- *Secretory Disturbances of Kidney in Hypertrophy of Prostate and Their
Significance in Determining Operability M Saegesser —p 331
- Remarks on Mode of Development Prognosis and Treatment of General
ized Peritonitis and Grave Appendicitis G Piotet —p 361
- Traumatic Fracture of Symphysis of Pubic Bone R Meyer Wildisen —
p 370
- *Gynecologic and Obstetric Significance of Essential Thrombopenic Pur-
pura H Guggisberg —p 375
- Technic of Carbon Dioxide Baths A von Neergaard —p 402
- So-Called Lymphatic Reaction and Contribution to Glandular Fever
A Studer —p 418

Kidney Disturbances in Hypertrophy of Prostate—Saegesser shows that the determination of operability is especially difficult in cases which stand at the threshold of operability. He discusses the test methods that have been recommended: the determination of the urea content of the blood, the dilution and concentration tests, the quantity of urine that is excreted in twenty-four hours, cryoscopy, refractometry and determination of the alkali reserve and of the sodium and the chloride content of the serum. Following a discussion of the pathologic-anatomic aspects and of the functional disturbances of the kidney of patients with hypertrophy of the prostate, the author gives a summarizing evaluation of the various methods of examination. He says that the urea values of the blood are found to be normal in a large percentage of cases with disordered renal function. An operation should never be done merely on the basis of a normal urea content. He states that a favorable outcome of the dilution and concentration test makes it probable that the patient will survive the operation, but the ultimate prognosis is not necessarily favorable. The determination of the quantity of urine excreted in twenty-four hours is of value only if considered together with the results of other examinations. The refractometric examination of the blood serum frequently discloses normal values. The determination of the alkali reserve of the blood revealed no parallelism with the other functional tests and the author thinks that this test has no particular value for the prognosis. The sodium content of the blood showed in many cases a relative reduction and the chloride content a relative or absolute increase. Although these changes are to a certain extent characteristic for hypertrophy of the prostate, more observations are required in order to determine whether they are helpful in the estimation of operability.

Gynecologic Significance of Essential Thrombopenic Purpura—After discussing the symptomatology of essential thrombopenic purpura Guggisberg gives his attention to the behavior of the genital organs in thrombopenia, pointing out that hemorrhage of the mucous membranes is one of the main symptoms of thrombopenia. The mucous membranes chiefly affected by the hemorrhage of thrombopenia are those of the nose and of the genitalia. The menstrual flow is usually increased in thrombopenia and it is frequently combined with severe nasal hemorrhage. The author discusses the relations between thrombopenia and the process of propagation that is, the significance of thrombopenia in pregnancy, delivery and the puerperium. Some observations indicate that in certain cases pregnancy may be an etiologic factor in the development of thrombopenia. However no definite proof has yet been furnished as to whether there really is a pregnancy thrombopenia. In discussing the influence of pregnancy in an existing thrombopenia, the author says that it may be exacerbated or improved. Birth and the afterbirth period may be entirely normal in thrombopenia. However there are also cases in which the hemorrhages after birth may threaten the life of the woman. During the puerperium, disturbances are frequent, even when the afterbirth period has been normal. The treatment of thrombopenia should be chiefly a general one, particularly during pregnancy. Especial attention should be given to the prevention of anemia.

Annali dell'Ospedale Psichiatrico di Perugia

30 1-60 (Jan March) 1936

Abnormal Instincts Normal and Pathologic Personality F Del Greco —p 1

*Alterations of Neuroglia in Cerebral Astrocytoma Histologic Study of Brain Case. G Agostini —p 19

Differential Glycemia in Arterial and Venous Capillaries in Manic Depressive Psychosis with Abolished Psychomotor Functions A. Ansani —p 33

Alterations of Neuroglia in Cerebral Astrocytoma—Agostini says that the histologic study of the brain in cases of cerebral tumor shows that there is a more or less intense but diffuse gliosis involving the brain even at distant areas from the location of the tumor. The areas around the tumor are involved more intensely by the glial reaction than those at a distance. The gliosis may involve both the white and the gray matter. It is probable that several pathogenic factors, such as predisposition of the individual, local conditions like cerebral compression by the tumor and irritation, and the action of toxic substances originating both from the tumor and from products of local cellular destruction, are involved in the development of the glial reaction. The author's statement is based on the review of the literature and on the histologic study of the brain in a case of cerebral astrocytoma located at the pons and medulla oblongata.

Riforma Medica, Naples

52 1145 1172 (Aug 22) 1936

Brucellary Spondylitis Treatment. L. Bargi —p 1147

*Behavior of Obstacle Phenomenon in Thallium Acetate Depilation for Ringworm in Children A. Nicastro —p 1152

Obstacle Phenomenon in Thallium Acetate Depilation.—Nicastro tested the obstacle phenomenon in the urine of a group of children during the process of depilation by thallium acetate in the treatment of ringworm. The figures showing positive results of the test began increasing from the fourth day of administration of the drug, reached the highest point on the eighteenth day, remained stationary until the twenty-eighth day, and then slowly diminished and became normal within the thirty-fifth and fortieth days. The author states that thallium acetate induces intense functional and anatomic alterations in the body. It has a selective action on organs of ectodermal origin, especially the nervous system. It causes a biochemical disequilibrium with elimination of a great amount of nitrogenous substances through the urine by which the obstacle phenomenon takes place. Falling of the hair is due to inhibition of the hair follicles by the local toxic action and neurotrophic effects of the drug. The highest figures of the curve in the obstacle phenomenon coincide with the days of falling of the hair and with the persistence of alopecia. Regrowing of hair coincides with a diminution of the figures and later on with the disappearance of the obstacle phenomenon in the urine.

Anales de Medicina Interna, Madrid

5: 707 799 (Aug) 1936

*Mechanism of Death in Addison's Disease (Functional Uremia) C. Jimenez Diaz and M. Arredondo Verdu —p 707

Urochrome Present Status of Knowledge E. Ortiz de Landázuri and A. Vergara Olivas —p 729

Hospital Scarlet Fever in Madrid F. T. Valdivieso —p 767

Cause of Death in Addison's Disease.—Jimenez Diaz and Arredondo Verdu state that death of patients suffering from Addison's disease is caused by true uremia and acidosis. The latter originates in renal insufficiency that is due to disturbances of the energy metabolism of the kidney resulting from the lack of production of adrenal substances. The functional insufficiency inhibits the production of ammonia by the kidney and results in an increased production of acids with consequent disturbances of the ionic and water metabolism whereupon there is increased elimination of sodium, the sodium-potassium balance of the blood is upset and there occurs increased destruction of proteins and increased production of toxic nitrogen bodies (urea and the similar bodies) which cannot be eliminated because of the functional renal insufficiency. As a result acidosis, uremia, potassemia, progressive cachexia and final coma take place. The picture of the mechanism of determination of death in Addison's disease is of importance

because it shows the mechanism of production of death in renal insufficiency in diseases other than Addison's and points out the role of renal insufficiency of adrenal origin in the development of acidosis and of functional uremia.

Prensa Medica Argentina, Buenos Aires

23 1991 2044 (Aug 26) 1936

Pulsating Tumors of Bones Skeletal Metastases of Hypernephroma Case. J. Diez and J. Michans —p 1991

Lymphocytic Acute Meningitis of Benign Evolution Case. D. Rocca and C. Salvo —p 2001

Partial Cystectomy in Cancer of Bladder F. E. Grimaldi and R. A. Rubi —p 2005

Histophysiology of Teguments of Batrachians J. Porto —p 2009

*Relation Between Cholesterol and Glutathione in Blood in Pulmonary Tuberculosis J. Viale and J. B. Ticinese —p 2032

Cholesterol and Glutathione in Blood in Chronic Pulmonary Tuberculosis.—Viale and Ticinese determined the amount of cholesterol and glutathione in the blood of twenty-five patients suffering from chronic pulmonary tuberculosis. They conclude that the amount of glutathione diminishes in direct proportion to the seriousness of the disease and parallels that of cholesterol. The two substances increase or diminish in equal quantities. Glutathionemia, in chronic pulmonary tuberculosis, is an index of the same prognostic value as cholesterolemia. The establishment of an index of the glutathione and cholesterol in the blood, which has been advised by Bethoux for evaluating the potential evolution of the disease and the resistance of the patients, is unnecessary and of no practical value. The determination of the amount of glutathione in the blood is an index of sufficient prognostic value.

Revista Españ de Enferm del Ap Digest., Madrid

2 563 640 (Aug) 1936

Diaphragmatic Hernia and Pseudohernia F. G. Lorenzana and J. M. Baamonde —p 563

*Colitis and Tuberculous Bacillema J. Villardell —p 571

Colitis and Tuberculous Bacillema.—Villardell found positive tuberculous bacillema in four patients out of a group of seventy-five who were suffering from cryptogenic colitis. The clinical picture of the patients suffering from tuberculous bacillema can be included in the types of diarrhetic colitis and colitis associated with constipation. Patients of the first type give a history of intestinal dyspeptic and nutritional disturbances from childhood. Those of the second type suffer from slight nutritional disturbances and persistent febricula. The roentgen examination of the colon in both forms of colitis shows segmental and total hypermotility of the organ but no signs of organic lesions. The author believes that cryptogenic colitis is a form of latent tuberculosis characterized by the clinical development of colic reactions. Diet is of primary importance in modifying the bacterial flora and the motor intestinal reactions. The author obtained satisfactory results from heliotherapy and small doses of sanocrysin (a double thiosulfate of sodium and gold). The general condition of the patients improved and in some cases the tubercle bacilli disappeared from the blood cultures. He calls attention to the importance of further work in this field for possible detection of a tuberculous etiology of cryptogenic colitis and also for early treatment of the disease.

Revista Medica del Rosario, Rosario de Santa Fe

26 495 606 (June) 1936

*Erythro sedimentation in Surgical Tuberculosis I. Sallitel —p 495

Argentinian and Foreign Laws on Ocular Accidents from Work

Ortiz —p 512

Life of Gastrointestinal Patient. J. Oriedo Bustos —p 540

Hydatid Cyst of Orbit Case. I. Racedo Aragon and A. C. Molina —p 567

Spontaneous Pneumothorax in Course of Acute Bronchopneumonia D.

case in Adult Case. J. Martinez and H. A. Kruse —p 574

Antileprosy Crusade in Sao Paulo A. Nudenberg —p 591

Erythro sedimentation in Surgical Tuberculosis.—Sallitel determined the sedimentation rate of the erythrocytes in thirty patients suffering from surgical tuberculosis in different locations. He concludes that the test is not specific and has a relative diagnostic value. The erythro sedimentation is slightly accelerated in the early evolution of the disease. In patients

in the incipient stage and in those suffering from tuberculosis in evolution, the erythro sedimentation increases after a subcutaneous injection of a small amount of a 1:10,000 tuberculin solution. It does not accelerate, however, when injected in patients clinically cured or in those suffering from osteochondritis. Low sedimentation speed indicates the existence of inactive lesions or of active lesions on the way to recovery. The curve of the sedimentation speed with maintained figures showing no tendency to decrease indicates the existence of lesions in evolution which do not improve by the treatment. In cases of this nature the prognosis is serious and a change of climate is indicated. The presence of an ascending curve of the erythro sedimentation generally indicates the development of an abscess.

Medizinische Klinik, Berlin

32: 921-952 (July 10) 1936 Partial Index

- Skin and Roentgen Rays H. T. Schreus—p. 921
Aspects of Cushing's Disease W. Berlinger—p. 923
*Pharmacologic Action of Bee Venom E. Starkenstein and H. Weden—p. 927
Simmonds Disease C. Kaufmann—p. 932
Evaluation of Premortal Xanthoproteic Reaction According to Becher and Its Relations to Premortal Anemia in Patients with Serious Disorders and in Senility A. H. Müller—p. 934
Observations on One Hundred and Thirty Five Cases of Thorax Empyema in Children Anna Schmidt—p. 937

Pharmacologic Action of Bee Venom—Starkenstein and Weden cite the results of other investigators who found that the action of bee venom following its intravenous injection is similar to that of the saponins or the sapotoxins. A number of investigators, including the authors, have determined that the action of saponin is largely due to disturbances in the distribution of cholesterol which in turn change the permeability of the cellular walls of different organs and cause changes in the distribution of exogenic and endogenic substances. It has been proved that the action of many narcotics is modified by disturbances in the cholesterol economy of the organism. For instance, following the parenteral administration of cholesterol suspensions the action of many narcotics can be intensified. The reciprocal action of saponin and cholesterol is demonstrated most strikingly in case of their simultaneous administration. The possibility of determining saponin action indirectly by its influence on narcosis provides a method for the detection of the saponin-like character of other substances. In view of the similarity of the actions of saponin and bee venom the authors decided to investigate whether bee venom has the same effect on narcosis as has saponin. Their experiments demonstrate clearly that, in this respect too, bee venom behaves like saponin. However, it has not been definitely determined as yet to what extent this action of bee venom is dependent on disturbances in the distribution of cholesterol.

Monatsschrift für Kinderheilkunde, Berlin

66: 107-250 (July 13) 1936 Partial Index

- Pulmonary Tuberculosis During Childhood A. Panoff—p. 107
New Investigations on Intra Uterine Carbohydrate Metabolism B. Szendi—p. 128
*Protein Fractions of Normal and Pathologic Cerebrospinal Fluid During Childhood P. Ujsághy—p. 137
Measles and Tuberculosis P. Svasits—p. 149
Clinical Aspects of Cerebral Tumors in Children J. Lutz—p. 155
Clinical Aspects of Hepatomegalies with Disturbances in Carbohydrate Metabolism G. O. Harnapp—p. 169

Protein Fractions of Cerebrospinal Fluid During Childhood—In the cerebrospinal fluids of fifty eight healthy and 122 children with acute and chronic diseases of the central nervous system, Ujsághy studied the total protein content as well as the fractions of albumin, total globulin, pseudoglobulin, euglobulin and fibrinogen. The total protein content was determined by means of the step photometer, the fractions with the aid of the nephelometer following precipitation with ammonium sulfate. In premature children he observed a considerable increase in the total protein and in the globulin content with comparatively greater increase of the euglobulins and fibrinogen. In these premature children the standard values are reached only about the sixth month that is much later than in the maturely born infants in whom they are reached at about the third month. These normal values are for the total protein

between 18 and 26 mg per hundred cubic centimeters (average 21 mg), for albumin between 13 and 21 mg per hundred cubic centimeters (average 17 mg) and for globulin between 4 and 66 mg per hundred cubic centimeters (average 53 mg). The albumins amount to about three fourths the globulins to one fourth, of the total proteins. Euglobulins and fibrinogen are absent from the normal cerebrospinal fluid after the sixth month. The globulin albumin quotient remains always below 0.5. In children with diseases of the nervous system the author found that in suppurating meningitides there was a greater and in tuberculous meningitides a milder increase in the protein values, at first with a relative and absolute increase in the albumins, later with a relative increase in globulins. The fibrinogen appears in almost every case in measurable quantities, but as a rule in large ones. In encephalitides, the author found that in sporadic and in morbillous encephalitis the total protein content may reach higher values and occasionally there are also greater euglobulin and fibrinogen values. In influenzal encephalitis the total protein values are often subnormal, occasionally with a relative increase in globulin. In postencephalitic conditions, subnormal values are more frequent and the euglobulin and fibrinogen values may still be increased months after the encephalitis. In children with cerebral tumors the total protein as well as the fractions usually show subnormal values. In epilepsy the values vary within the normal limits immediately after the attacks the globulins may be relatively increased. In chorea minor the values do not exceed the norm. In syphilitic nurslings the protein values are usually within normal limits but there may be an increase in euglobulin and fibrinogen. In cases in which meningitis and syphilis concur, the changes that are characteristic for syphilis are displaced by the albumin increase that occurs in meningitis, only the relatively higher euglobulin and fibrinogen values indicate syphilitic origin. In juvenile tabetic dementia paralytica there is an absolute increase in globulin. Hypernormal total protein values as well as increases in euglobulin and fibrinogen occur also in Little's disease. Subnormal values occur in idiocy and imbecility.

Measles and Tuberculosis—In the course of an epidemic of measles, Svasits studied the action of measles on latent and active tuberculous processes in the lungs by means of clinical roentgenologic and laboratory methods. Of seventy children who had a positive tuberculin reaction, seven presented symptoms indicating activity. These were mostly young children. Thus it seems that an intercurrent attack of measles is particularly dangerous for young children who have an active tuberculosis. The author emphasizes that during an epidemic of measles all children with a positive tuberculin reaction should be protected regardless of whether the process is active or not. Protection is especially important in the case of small children. In case of an active process the protection should be complete (at least from 3 to 6 cc of measles convalescent serum), in case of inactive tuberculosis and outside of clinics, it is sufficient to mitigate the measles by the administration of from 20 to 30 cc of serum from adults or of 30 to 50 cc of blood

Wiener klinische Wochenschrift, Vienna

49: 1085-1116 (Sept 4) 1936 Partial Index

- Roentgenograms of Results of Accidents and Their Evaluation W. Altschul—p. 1085
Casistics of Deformity of Ureter in Roentgenogram T. Canigiani—p. 1086
Roentgenologic Diagnosis of Articular Disorders F. Eisler—p. 1088
*Experiences with Irradiations in Dupuytren's Contracture J. G. Feurstein—p. 1090
Atelectasis and Pleurisy F. Fleischner—p. 1092
Influence of Early Roentgenologic Diagnosis on Mortality of Tuberculosis F. Freund—p. 1096
Exclusive Roentgenotherapy of Mammary Carcinoma F. Melchart—p. 1101

Irradiation in Dupuytren's Contracture—Following a review of the theories that have been advanced regarding the pathogenesis of Dupuytren's contracture, Feurstein evaluates surgical treatment, conservative measures (hot baths, massage, wearing of splints at night) and injections. When he himself developed a Dupuytren's contracture he decided to try ray therapy. A review of the literature convinced him that the opinions about the value of roentgen and radium therapy dif-

ferred and that the reports about radium therapy were few. Since in earlier years his hands had been rather excessively exposed to X-rays, he decided to resort to radium in his own case. He divided the Y shaped area of hardening in his hand into two fields and applied a radium container with 50 mg of radium, brass filtration and a wrapping of gutta-percha and gauze twice for forty-eight minutes (40 mg element hours each time). After eighteen days he repeated the treatment with half this dose and after another month he again applied the first dose. Later he repeated the first total dose at longer intervals three times, once distributing the dose to three fields. The result of this treatment was highly satisfactory. The pains subsided after two sessions and the slight contracture also disappeared. The characteristic fibrous pads in the hand became smaller. Later the first signs of Dupuytren's contracture developed also on the other hand. Radium treatment again proved effective. The good results he had obtained on himself induced the author to try radium in eight other cases of Dupuytren's contracture. He reports the histories of three of them and concludes that radium treatment is especially advisable for the early stages, because, if applied at this time, it not only arrests the further progress of the disorder but also counteracts the symptoms, even though it may not effect a complete restitution. However, after the contracture has reached considerable degrees, the patient should be treated surgically.

Roentgenotherapy of Mammary Carcinoma—In continuing his studies on the simultaneous radium and roentgen therapy of mammary carcinoma and on the basis of results reported by Keynes and Wester Melchart decided to try exclusive roentgenotherapy in the form of the near irradiation. He worked with an apparatus for surface therapy, with tensions of from 50 to 100 kilovolts, with a focus-skin distance of from 5 to 8 cm, with from 1 to 3 mm of aluminum filtration and with fields having a diameter of from 6 to 8 cm. The doses varied between 3,500 and 10,000 surface roentgens. With this treatment the primary tumor could always be made to disappear. When metastases developed, they could be counteracted either with this method or by means of contact therapy. However, prophylactic barrier irradiations did not prevent further metastases. The method failed also in the treatment of the metastases of the supraclavicular glands. Moreover, the method involves the danger of necrosis in patients who have been previously irradiated. The author thinks that so far the combination of preliminary irradiation surgery and after-irradiations must be regarded as the best method for the treatment of mammary carcinoma.

Vestnik Khirurgii, Leningrad

44: 171-342 (No. 122) 1936 Partial Index

Experimental Data Regarding Pathogenesis of Traumatic Shock. P. N. Veselkin, I. S. Lindenbaum, M. E. Depp and Kh. Tagibekov.—p. 176
Symptomatology and Therapy of Noma. I. M. Sobol.—p. 204

*Operative Treatment of Diseases of the Biliary Tracts. E. N. Klarfeld.—p. 218

Surgery of Gallbladder and Biliary Tracts. From the Surgical Division of V. A. Oppel, I. A. Shraer.—p. 234

*Pylephlebitis as Complication of Appendicitis. A. T. Lidskiy.—p. 240
Urethral Injuries. A. I. Vasiliev.—p. 251

Operative Treatment of Diseases of Biliary Tracts—Klarfeld reports 170 cholecystectomies, twenty-six cholecystectomies combined with choledochotomy, four cholecystogastrotomies, one cholecystojejunostomy and one hepaticoduodenostomy. There were sixteen fatalities in a total of 207 operative cases, a rate of 7.7 per cent. Internal biliary fistulas were observed in six cases, two between the gallbladder and the stomach, one cholecystocolic, one cholecystoduodenal, one between the choledochus and the duodenum and one between the choledochus and the stomach. The cause of death was peritonitis in four, hemorrhage in three, cardiac failure in three, pneumonia in two, cancer metastases in two, subdiaphragmatic abscess in one and ulcerative esophagitis in one. There was not a single fatality in 105 cases of cholecystectomy in which the peritoneal cavity was closed without drainage. The author states that closure without a drain is followed by a smoother postoperative course, obviates painful dressings, prevents postoperative hernia and shortens the period of hospitalization. It is however

contraindicated in the presence of obstruction of the common duct, insufficient peritonization of the stump of the cystic duct or of the gallbladder bed, doubtful hemostasis, injury to the biliary tracts or soiling of the wound with gallbladder contents. Hydrops or edema of the gallbladder does not constitute a contraindication to closure without a drain. Operation in the acute stage is more hazardous than in the interval. He advocates early operation. The death rate in neglected cases on patients past the age of 40 amounted to 18 per cent in his series, whereas the early operation had a mortality of 2.2 per cent. The operation of cholecystotomy is seldom indicated. The common duct need not be opened in every case of cholecystectomy. This is indicated only in the presence of a cholangitis with or without stones.

Pylephlebitis of Appendiceal Origin—The review of literature suggests, according to Lidskiy, that the incidence of pylephlebitis or mesenteric pyemia, as a complication of appendicitis, is on the decrease. He believes that this is due to the more universal application of the principle of early operation in acute appendicitis. One or more chills, rise in temperature, icteric discoloration of the skin and of the sclerotics, enlargement of the liver and a blood picture characteristic of a severe acute suppurative process suggest the diagnosis. The early diagnosis, however, is difficult and even liver puncture as proposed by Nössen, Martens and other authors may in the presence of multiple small liver abscesses give negative results. There exist few indications for ligation of the ileocecal veins at the time of appendectomy. A secondary operation proposed by Wilms and having for its aim ligation of the ileocecal veins in order to arrest the spread of infection into the superior mesenteric vein, the portal vein and the liver has given encouraging results. To be effective it must not be delayed until the development of a characteristic clinical picture. The prognosis in the presence of this complication is grave, the mortality ranging with various authors from 80 to 100 per cent. The best prophylaxis is the early operation of acute appendicitis. This indication becomes even more stringent in the presence of a chill in an acute case of appendicitis.

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*Contribution to Knowledge of Eye Symptoms in Thyrotoxicosis. J. Wahlberg.—p. 579

*Atypical Leukosis with Multiple Tumor-like Infiltrate. Case. B. von Bonsdorff.—p. 589

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Peripheral Paralysis of Facialis Following Acute Otitis. H. Björk.—p. 622

Muscles of Gluteal Region in Primates. A. Riska.—p. 631

Eye Symptoms in Thyrotoxicosis—In two of the reported cases of edema of the temples in thyrotoxicosis the condition appeared and disappeared during active thyrotoxicosis together with the classic symptoms of the disorder and in the third case the edema occurred parallel with exophthalmos in a patient with postoperative myxedema and disappeared on medication with thyroid substance simultaneously with recession of exophthalmos and myxedema. Wahlberg is inclined to ascribe this edema of the temples like exophthalmos and edema of the eyelids in thyrotoxicosis, to humoral action of the adeno-hypophyseal principle by way of the sympathetic nervous system or directly on the local tissues. He says that, since edema of the eyelids and temple is seen only in certain cases and often asymmetrically, there must be variations in sensitivity to the humoral influence, partly variations in the different cases partly locally in a given case, and that possibly the characteristic variability otherwise in the picture of thyrotoxicosis may also depend on such variation.

Atypical Leukosis with Multiple, Tumor-like Infiltrate—Von Bonsdorff says that this case, regarded by him as an acute hematopoietic systemic disease related to chloroma, was a rapid febrile course and changes in both the white and the red blood picture and with pronounced fibrosis of the spleen in a girl aged 15 was dominated by multiple tumor formation, probably built up of myeloid cells with origin to be sought in an autochthonous heterotopic metaplasia of mesenchymal (reticulo-endothelial) element in the affected organs.

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STUDIES IN OVULATION

THE OPERATIVE OBSERVATIONS IN PERIODIC INTERMENSTRUAL PAIN

LAWRENCE R WHARTON, M D

AND

ERLE HENRIKSEN, M D

Assistant Attending Gynecologist and Resident Gynecologist
Respectively the Johns Hopkins Hospital

BALTIMORE

By periodic intermenstrual pain we mean the recurring discomfort which some women feel half-way between their menstrual periods. The peculiar, persisting periodicity of this pain arouses the curiosity of intelligent patients, for, as one woman told us, it is "as regular as clock-work." Many women can foretell to the day the onset of the next menses from the date of this periodic intermenstrual pain. The Germans have called this syndrome *mittelschmerz*.

The cause of this pain has never been determined. At the present time it is variously attributed to uterine contractions, to peristalsis of the tube as it propels the ovum toward the uterus and to ovulation.

We are herewith presenting a study of sixty-one cases of this syndrome. After sketching the historical background of the problem, we shall outline the main features of normal ovulation and see whether periodic intermenstrual pain is in any way associated with ovulation. The fact that thirty of our patients were subjected to laparotomy has given us an unusual opportunity to observe the pathologic changes and to determine the effect of various operative procedures on this syndrome.

It is usually asserted by American gynecologists that Sir William O Priestley³ was the first to describe this condition. Similarly, German writers are apt to ascribe the priority to Fehling.⁴ Without delving too deeply into ancient lore, however, it is quite evident that at least twenty-five years before either of them wrote about this subject the condition was known and its connection with ovulation was suspected.

In 1847 Pouchet casually wrote the following paragraph, which one finds buried in his voluminous book on ovulation and conception in mammals:

At about this time, and occasionally only on the eighth day after the cessation of the menses, many women feel in the region of the pelvis occupied by the tubes a sensation of weight or even of moderately severe pain which lasts one or

two days. These symptoms, which surely indicate some organic function, correspond, not to the expulsion of the ova by the follicles of de Graaf, but to the contractions which the fallopian tubes make to propel the egg toward the uterus.

Among other early writers on this subject Priestley must be mentioned, for he may have been one of the first to attribute the discomfort to ovulation. In the *British Medical Journal* in 1872 he reported four cases with the records of his pelvic examinations.

In 1883 Lawson Tait⁵ said:

A singular condition has been noticed by Dr Priestley, of intermenstrual pain occurring about midway between the periods, which is almost certainly due to an ovarian condition, though it is not clear of what kind. Since reading his paper I have seen several cases, but have been unable to refer them to any category.

The views of these pioneers formed the basis of future discussion, but nothing definite was added for years, although many new theories were enunciated. It must be remembered that in their time ovulation was believed to occur at the height of menstruation and intermenstrual ovulation was thought to be rare. Sporadically during the next twenty-five years cases were reported in Europe and America (Fehling,⁴ Palmer,⁶ Croom,⁷ Marsh,⁸ Addinsell,⁹ Storer¹⁰ and others). The actual data thus assembled are naturally of great interest. Two cases of alternate pain were observed by Storer, in which the intermenstrual discomfort, recurring every month, was felt regularly in alternate sides. Storer's study is comprehensive, as he reports twenty cases of his own, one of the largest individual groups that have ever been assembled. It was only the keenness and independence of their clinical observations that led some of these men to suspect that ovulation might possibly occur occasionally between the menstrual periods.

Another source of confusion lay in the fact that very few of those who suffered from periodic intermenstrual pain were explored surgically, because abdominal operations were rarely performed in those days. Dr Howard A Kelly^{10a} emphasized this in 1908, thereby suggesting a constructive method of approach in studying the problem. He assembled the few cases in which operation had been performed and concluded that the results of treatment had been discouraging—that the condition was not self limited and had been known to recur periodically every month through the whole menstrual

From the Department of Gynecology of the Johns Hopkins Hospital and University.

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³ Priestley, W. O. Cases of Intermenstrual or Intermediate Dysmenorrhoea. *Brit. M. J.* 2: 431, 1872.

⁴ Fehling, H. Zur Casuistik des Intermenstrualschmerzes. *Arch. f. Gynak.* 17: 338-350, 1881.

⁵ Tait, Lawson. Disease of the Ovaries. New York: William Wood & Co., 1883, p. 125.

⁶ Palmer, C. D. Periodic Intermenstrual Pain. *Tr. Am. Gynec. Soc.* 17: 47, 1892.

⁷ Croom, J. H. Mittelschmerz. *Edinburgh Obst. Tr.* 21: 26-34, 1895-1896.

⁸ Marsh, Marian. Intermenstrual Dysmenorrhoea with Theories. *Am. J. Obst.* 36: 64, 1897.

⁹ Addinsell, A. W. Intermenstrual Pain. *Brit. M. J.* 1: 692, 1897.

¹⁰ Storer, Malcolm. On Intermenstrual Dysmenorrhoea. *Boston M. & S. J.* 142: 397, 1900.

^{10a} Kelly, H. A. Medical Gynecology. New York: D. Appleton & Co., 1908.

life. He pointed out that dilation and curettage of the uterus had been tried in eleven recorded cases without benefit and that bilateral oophorectomy had brought complete relief in four of five reported cases. Similarly uterine suspension had been of little value, although in one case it had been entirely successful. He even went on to indicate that at times very conservative measures had been helpful, such as the use of an intra-uterine pessary when the uterus was sharply anteverted, and that in one instance merely rest in bed had been successful.

Dr. Kelly agreed with Priestley that the discomfort was associated with ovulation, although he remarked that "it was hardly possible that ovulation would take place regularly between two menstrual periods for a number of years, or even through the whole of sexual activity."

Heaney¹¹ then reported three operative cases in 1910, all involving removal of one or both ovaries, and in all the pain was cured. After reviewing the literature, however, he concluded that the discomfort was not due to ovulation but was an abortive attempt at menstruation. In 1916 Welton¹² reported one operative case which was cured by supravaginal hysterectomy and left salpingo-oophorectomy, the patient having a myoma of the uterus and a cystic left ovary. The intermenstrual pain had been located regularly in the region of the left ovary.

This cursory review shows the confusion that existed until well into the twentieth century. As we have pointed out, this was due to two reasons: first, the current opinion that ovulation and menstruation were synchronous, and, second, the lack of opportunity in these cases to study the pelvic organs by means of laparotomy.

THE PHENOMENA ATTENDING OVULATION

The main features of the first difficulty were quickly eliminated when the relation between ovulation and menstruation was better understood. It is probably true that between 1903 and 1930 more was learned about the phenomenon of menstruation than had ever been known before. Between 1903 and 1910 the careful studies of Fraenkel, Meyer and Ruge, Hirschmann and Adler, and Schroeder cast an entirely new light on the whole process, particularly the function of the corpus luteum and the histology of the endometrium. This work suggested very strongly that ovulation occurred about two weeks before the beginning of the menstrual period. The next notable contribution was the work of Corner,¹³ who in 1923 was the first to recover unfertilized ova from the fallopian tubes of primates, although he had previously recovered them repeatedly from the oviducts of the sow. In the monkey (*Macacus rhesus*) he found that the menstrual cycle practically paralleled that of woman, exhibiting the same regularities and irregularities, the usual length being twenty-seven days, and the duration of the menses from four to six days. He determined that ovulation "occurred about twelve or thirteen days before the expected onset of menstruation," basing this conclusion on the actual recovery of the ova from the tubes, the presence of freshly ruptured follicles in the ovary, and the state of the endometrium.

In 1928 Allen, Pratt, Newell and Bland¹⁴ duplicated in women Corner's observations in monkeys by recovering seven unfertilized ova from the fallopian tubes of six women. This was the first time that this feat had been accomplished. They found the ova by washing out the tubes on the twelfth, fifteenth and sixteenth days of the menstrual cycle and in all these cases found freshly ruptured mature graafian follicles or very early ruptured corpora lutea, depending on the age of the ovum. By these clear-cut contributions the time of ovulation was definitely fixed as occurring between the menstrual periods and usually bearing a definite relation to the approaching menses.

If this is so, ovulation in women is analogous to estrus in lower animals. In women, however, ovulation is ordinarily attended by no remarkable signs or phenomena, whereas in lower animals estrus is the period of heat and may be marked by definite stigmas and by the behavior of the female toward the male. The problem of ovulation and its relation to estrus then began to attract attention and, as a consequence, some features were observed which also have helped us to understand the problem which we are considering: periodic intermenstrual pain.

In 1928 Simpson and Evans¹⁵ reported an instance in which faint, microscopic uterine bleeding was observed to occur regularly and periodically in a healthy woman aged 32. It was seen between the fifteenth and the nineteenth day of the menstrual cycle, was constant in its appearance and lasted only a day or two. These observations covered a period of twenty months. This was apparently the first time that this phenomenon had been seen in a human being.

In 1929 Hartman¹⁶ reported the situation as it existed in the monkey. He confirmed and amplified Corner's observations and made several significant additional contributions. These have since been confirmed by observations that have covered many years, for by means of laparotomy, histologic examination, rectal palpation and vaginal smears it is possible to study the menstrual cycle of the macaque with a directness and accuracy impossible in women. Hartman found that 75 per cent of the menstrual cycles in the macaque were accompanied by intermenstrual bleeding such as Evans and Simpson had reported in one woman, and that it occurred at the time of ovulation. He also noted that in more than half of their monkeys ovulation took place on the eleventh and twelfth days, in the rest ranging from the seventh to the eighteenth day of the menstrual cycle.

In 1933 Papanicolaou¹⁷ reported a similar study in women. In a large series of women he found grossly visible bleeding in 93 per cent on the twelfth day and in 43 per cent on the thirteenth day of the menstrual cycle. By microscopic examination of vaginal smear, however, he observed a much higher incidence, 186 per cent bled on the twelfth day, 152 per cent on the thirteenth day and 238 per cent on the fourteenth day.

In 1934 Hain¹⁸ reported a similar observation in a woman aged 40, the study covering twenty-nine men-

14 Allen, Edgar, Pratt, J. P., Newell, Q. U. and Bland, L. L. Recovery of Human Ova from the Uterine Tubes. *Time of Ovulation in the Menstrual Cycle*. J. A. M. A. 91: 1018-1020 (Oct. 6) 1927.

15 Simpson, Miriam E. and Evans, H. M. Occurrence of Faint Bleeding on a Definite Intermenstrual Day in Man. *STUDIES IN Gynecology*. (Nov. 9) 1928.

16 Hartman, C. G. The Homology of Menstruation. J. A. M. A. 87: 1992 (June 15) 1929. *Time of Ovulation in Women*. Baltimore, W. B. Wood & Co. 1936. p. 226.

17 Papanicolaou, G. N. Sexual Cycle in the Human Female. *J. Anat.* 52: 519 (May) 1933.

18 Hain, A. M. Ovulation and the Human Sex Cycle. *Fert. & Steril.* 4: 454 (March 10) 1934.

11 Heaney, N. S. Periodic Intermenstrual Pain. *Surg. Gynec. & Obst.* 11: 361-367 (1910).

12 Welton, T. S. Intermenstrual Pain. *Long Island M. J.* 10: 228 (June) 1916.

13 Corner, C. W. Ovulation and Menstruation in *Macacus Rhesus*. *Contributions to Embryology* 15: 75. Carnegie Institution of Washington 1923.

strual cycles In this case the menstrual cycle exhibited the usual variations and the intermenstrual bleeding occurred between the twelfth and the twenty-second day of the cycle, being visible for only one or two days In the same year Seguy and Simonnet¹⁹ reported an interesting study of the direct signs of ovulation in women They found that in many women ovulation is accompanied by the appearance of a thick, translucent glairy secretion in the cervix, and they believed this to be the most evident and the commonest external sign of ovulation They observed that at that time also the titer of estrogenic substance in the urine reached its highest level On the basis of these data they examined the ovaries of five women on whom they operated at the moment that the titer of the estrogenic substance was highest and the cervical mucus most evident In four of the five they found ripe graafian follicles In the fifth the ovary contained only a small, immature follicle Furthermore, in the three patients with so-called functional sterility they carried out artificial intra-uterine insemination when these signs indicated ovulation, and impregnation resulted

Thus, over a period of thirty years the problem of ovulation and menstruation was attacked from many angles, and as a result there is now a clearer notion of the nature of these processes, although at the same time many new and unsuspected problems are created Nevertheless, it became known that ovulation usually occurs in the middle of the menstrual cycle, that it varies widely just as the menstrual cycle does, that it may occur at any time between the seventh and the twenty-second day, and that it usually precedes the approaching menses by a definite number of days Also it became known that ovulation in women is analogous to estrus in lower mammals and that, even in women, ovulation may be attended by slight bleeding or discharge It remains to be seen how this information can be applied in the study of the clinical problem of intermenstrual pain and whether this clinical syndrome also can be correlated more definitely with ovulation

CLINICAL STUDY

In this clinical study we present a series of sixty-one cases of periodic intermenstrual pain, practically all of which have been studied in the last five years In thirty of these, laparotomy was performed for a variety of reasons We shall attempt to analyze these cases from several points of view and see whether a routine clinical study such as this will make it possible to reconstruct a clinical picture of ovulation in women such as is known to exist in the macaque One of the features of this picture, faint bleeding, has been carefully noted in women by Hain, Evans and Simpson and Papanicolaou

Our observations concerning sterility and the significance of associated pelvic disorders may not be in agreement with opinions often recorded in the literature The relation that intermenstrual pain may bear to a great variety of pelvic lesions is discussed and the effect of corrective pelvic operations is summarized These cases were subjected to laparotomy at varying times in the menstrual cycle, and in a good many the condition of the ovaries was noted Contradictory evidence is recorded and the picture is assembled exactly as we have found it

Incidence—A thorough survey of the literature reveals few reported cases though, oddly enough all

those who have written on the subject comment on its relative frequency The basis of its apparent rarity in many clinics is only natural in view of the failure to include it in the anamnesis This salient point has recently been emphasized in our own work

This is usually a syndrome of such mildness that it will not be noticed unless the physician deliberately inquires about it Only the acute and severe cases will impose themselves Our series illustrates the point rather clearly Among the many thousands of patients who have visited the gynecologic clinic in the past five years, only thirty-two cases of periodic intermenstrual pain have been found, and half of these were of the severe variety that could not be missed because they simulated abdominal emergencies In private practice, however, we have seen twenty-nine perfectly typical cases in the same length of time It is apparently another instance of "he that seeketh, findeth"

Time of Pain—Two features have marked this pain as being of a peculiar nature the time of its occurrence in the menstrual cycle and its recurring periodicity These are the characteristics that have always stimulated the curiosity of gynecologists and of intelligent patients

Of the sixty-one patients, forty-eight gave the exact time at which they felt the pain The majority occurred between the tenth and the twelfth day, with five cases occurring on the tenth, nine on the eleventh, eighteen on the twelfth, seven on the thirteenth, six on the fourteenth and two on the fifteenth day after the onset of the previous period One patient placed the onset of the pain seven days after the onset of the cycle Admitting the notorious inaccuracy of the catamenial calendar, in the majority of the typical cases the pain occurred at a fairly definite period on each occasion If the pain tends to occur each month, most of the patients can predict with fair accuracy the day of its next appearance and the date of the next menses

Age of Onset—Ten of our patients traced the onset of intermenstrual pain to the menarche, and in 70 per cent it was present before the patient was 20 years old In 90 per cent the syndrome developed before the age of 30 It is thus a condition that develops almost always in young women and girls, although one will find exceptions At the upper extreme, one of our patients developed typical periodic intermenstrual pain at the age of 46

Character of Pain—The typical mild midmenstrual pain has been described many times, our data concerning this type will be presented later There is also an equally typical acute variety, the significance of which is often missed In this acute type the syndrome often resembles ruptured tubal pregnancy or acute appendicitis, and for this reason most of these operations have been performed as surgical emergencies We shall study this group first and later discuss the more typical and commoner type of mild mittelschmerz

The Acute Type—We have had twenty-one cases of acute intermenstrual pain These patients were seen and operated on by various members of our staff, quite a few were in the surgical service In most of these acute cases the preoperative diagnoses were acute appendicitis or ruptured tubal pregnancy When a young woman presents herself with acute pain in the right lower quadrant, nausea a temperature of 101 F and a leukocytosis of 12 000 or more, it would require extreme self confidence to advise anything but explor-

19 Seguy J and Simonnet H Recherche de signes directs d'ovulation chez la femme Gynec et obst 28 657 663 (Dec) 1933

tion of the right lower quadrant Hoyt and Meigs²⁰ have recently presented a study of acute abdominal conditions due to rupture of the graafian follicle and corpus luteum, seen in the surgical service of the Massachusetts General Hospital. They reported a series of fifty-eight cases in which operation had been done as surgical emergencies between 1929 and 1934. The usual pre-operative diagnosis was acute appendicitis, although in seventeen the correct impression was reached before operation, an excellent record. As in our series, the leukocyte count sometimes was very high, reaching 27,000. In many instances this is due to the free blood that escapes from the ruptured graafian follicle. In one of our cases, however, there was a leukocytosis of 22,000 without any intra-abdominal hemorrhage.

The differential diagnosis of this condition is difficult and imposes a grave responsibility on the surgeon. These acute cases are not as regular in their periodicity as the mild type of mittelschmerz, indeed, ovulation may have been perfectly normal before. Thus, Hoyt and Meigs reported that twenty-six of their fifty-eight patients had never had a previous attack of periodic intermenstrual pain, in our series the percentage having former attacks was slightly higher. As a rule, however, in these severe acute cases presenting marked hemorrhage the regular, invariable, periodic pain is not as constant a feature as it is in the milder type.

Then, again, the time of ovulation varies widely, as we have shown, occurring normally between the seventh and the eighteenth day of the menstrual cycle. Consequently, one cannot always eliminate the possibility of acute rupture of the graafian follicle because it does not occur exactly on the twelfth day of the cycle.

Nevertheless, this syndrome presents a clinical picture with definite characteristics which usually differentiate it rather sharply from acute appendicitis. The history is often significant for, as we said, in more than half one will find that there have been former similar attacks and that they have always occurred between menstrual periods, usually in the midmenstrual interval. The character of the former attacks is also significant, in that they have usually been short, with prompt convalescence, resembling dysmenorrhea more than appendiceal colic. Rectal pain, leukorrhea and at times a little vaginal bleeding and bladder symptoms may be present. One of our patients had slight diarrhea, probably due to rectal irritation, just as one may see in a pelvic abscess. In general, the history is usually more suggestive of a gynecologic than of an intestinal disorder.

The gynecologic examination shows that the whole pelvis is tender, although this is usually more marked on one side. There is definitely more pelvic than abdominal tenderness. In some of our cases the pelvis felt just as it would in acute salpingitis. There may be a sense of induration on the affected side, but masses are not ordinarily palpable, and the tenderness usually prevents one from outlining the ovaries. Vaginal washings will often reveal microscopic blood in the uterine secretions when it is not visible grossly. The vaginal bleeding is rarely, if ever, sufficient to attract one's attention unless one deliberately looks for it or inquires about it.

Rupture of the graafian follicle is not usually accompanied by as severe hemorrhage as is ruptured tubal pregnancy, the shock is usually less, there is rarely

any irregularity of menstruation, and the vaginal bleeding is much less than in ruptured tubal gestation.

The experience of Hoyt and Meigs and ourselves has shown that, on the basis of these data, one can often diagnose rupture of the graafian follicle with accuracy. When the diagnosis seems clear, should one operate? Under such circumstances, we have pursued a conservative course, watching the patient carefully until convalescence is complete but being ready to intervene surgically if necessary. When the abdominal hemorrhage is severe, it is undoubtedly best to operate, as the possibility of tubal pregnancy cannot be eliminated. In the milder cases we would certainly prefer to watch the patient and avoid surgery if possible. When there is any doubt about the diagnosis, the abdomen should certainly be explored. If, at operation, one finds a ruptured graafian follicle or corpus luteum instead of acute appendicitis or tubal pregnancy, the ovary should be saved, only the bleeding corpus being excised.

The reason for conservatism either in avoiding operation or in saving the ovary is simply that the syndrome often recurs whether one operates or not and may involve both ovaries. Unless the trouble is always due to one ovary, nothing less than bilateral oophorectomy will cure the obstinate case. The futility of operation is therefore clear, except as a life-saving measure or because of the impossibility of excluding appendicitis or tubal pregnancy.

Only three months ago a woman, aged 28, the mother of one child, was admitted to the Woman's Hospital of Baltimore with the diagnosis of ruptured tubal pregnancy. The patient had only one ovary, the other having been removed five years previously because of a dermoid cyst. The immediate clinical picture, indeed, resembled tubal abortion, the history, however, showed that during the preceding year the patient had had five such attacks, although they had been of less severity. At operation the bleeding was found to be due to a ruptured corpus luteum, which was excised. Since leaving the hospital the patient has had two more attacks, at the exact midmenstrual interval.

Such experiences serve to emphasize the fact that in these cases one is dealing not only with an isolated ruptured corpus luteum but with a recurring dysfunction of the ovary. The corpus luteum which happens to be present when the surgeon operates may be the source of the immediate hemorrhage, but the basic cause of the dysfunction lies deeper and is as much a mystery today as it was to Pouchet^{20a} and Sir William Priestley. Microscopic examination of these corpora lutea has shown no unusual changes whatever. Fortunately, these acute, severe cases with marked hemorrhage do not recur as regularly as do the milder one, in fact, the patient may never have another severe attack.

The Mild Type — Among the forty typical mild cases, twenty-three patients complained of bilateral pain, ten localized the pain to the right side, four complained of left-sided pain, and three stated that the pain was present on both sides but was more severe on the right. Of the twenty-one acute cases, eleven patients localized the pain in the right side, six had pain on the left side, four had bilateral pain, and one of these stated that she experienced bilateral pain every other month. Though there is a marked variance in the severity of the pain, it is usually depicted as being cramp-like and intermittent. Infrequently the patient comments on a tendency of the pain to radiate toward the rectum, in

²⁰ Hoyt, W. F. and Meigs, J. V. Rupture of the Graafian Follicle and Corpus Luteum. Surg. Gynec. & Obst. 62: 114-117 (Jan.) 1936.

^{20a} Pouchet, F. A. Theorie positive de l'ovulation ovarienne et de la fecundation des mammiferes et de l'espece humaine. La science de toute la serie animale. Paris: J. B. Bailliere 1847, p. 248.

the majority the pain is localized in the pelvis. Typically, the onset of the pain is gradual, reaching a peak approximately half-way through the pain period, the subsidence is usually more rapid and, except in those few cases in which the pain persists until the onset of the next period, is followed by complete relief. An occasional patient experiences a sense of pelvic fullness for several days following the disappearance of the pain. A few experience no actual pain but complain of a sense of pelvic discomfort not infrequently associated with a feeling of general malaise. The pain is not constant but varies with each occurrence from a sense of fullness to severe cramps. Many patients say that the discomfort is just like dysmenorrhea, except that it may differ in intensity.

Dysmenorrhea—More than half of our patients had no dysmenorrhea, thirteen had slight pain, six had moderate associated pain, while only five complained of severe cramps.

One patient, a white woman aged 22, single, suffered severe cramp-like pains with her first menses, two years later she noted a gradually increasing pain at the intermenstrual period, as this pain became more severe, the dysmenorrhea became less noticeable. At the present time the dysmenorrhea has practically disappeared while the intermenstrual pain is frequently severe enough to confine her to bed for one day each month. For the past six months there has been a scanty associated bleeding and some nausea but no vomiting.

In general, the menstrual periods of these sixty-one patients exhibited the same characteristics that would be found in any group of normal women.

Sterility—Thirty-three patients were married. Of these, four admitted the use of contraceptive measures, one had uterine myomas with endometriosis, and another had obesity with a definite endocrinopathy, thus making it possible to explain the sterility of six women in this group, leaving twenty-seven who, as far as we know, might have conceived. As a matter of fact, twenty-one of these women had conceived, a total of sixty pregnancies being recorded. Only one patient complained of sterility. Of the twenty-eight unmarried women, one had been pregnant. We do not know whether the presence of intermenstrual pain prevents these women from having intercourse during the period of ovulation, which is supposedly the optimum time for conception. It is quite evident, however, that this syndrome is not characterized by sterility. It is often stated in the literature that these women are apt to be sterile.

Sexual Desire During Period of Ovulation—We have asked a few of these patients whether they noticed any increase in sexual desire during the period of ovulation. Their usual reply has been that they felt so wretched then that their only desire was to be left alone. It would be interesting to know whether women who ovulate normally and painlessly note any increase in sexual desire at that time. Animals of course, apparently have no sexual desire and will not tolerate coitus except during the period of ovulation, while in estrus.

Associated Bleeding, Vaginal Lavage—In our group, twelve had intermenstrual bleeding profuse enough to necessitate protection. An occasional brownish discharge is not infrequent, though usually not profuse enough to warrant a pad. We have recently made vaginal washings in five of our typical cases in which the patient denied intermenstrual bleeding. All five showed microscopic blood. On the second day preceding the appearance of the pain the washings have been

free of red blood cells, on the day of the pain red cells have been demonstrated. The pain in each instance lasted for two days, the red cells disappeared from the washings on the fourth day following the onset of the pain. A leukorrheal discharge, usually scanty, is not infrequent and as a rule is mucoid.

The existence of bleeding in these cases can be determined only by definite questioning or by vaginal lavage. The necessity of making these questions a part of the regular gynecologic history is shown by our records. Of the twenty-nine patients seen in private practice twenty-two were found to have an unusual discharge during the period of intermenstrual pain, and we found that nine noticed slight recurring bleeding at that time. Among the thirty-two hospital patients, however, associated intermenstrual spotting was noted in only three cases. This is a comment only on the accuracy of gynecologic histories.

It is our opinion that routine vaginal washings in these cases would have shown that spotting occurs far more frequently than the patients' histories indicate. At least, that has been our experience. Further observations on this subject are needed. We believe that this is the first time that vaginal washings have been used in the study of patients with periodic intermenstrual pain.

Blood Studies—We know of no extensive study of the blood made during ovulation. Of course, when there is free blood in the pelvis from the rupture of the graafian follicle, the leukocyte count is elevated.

Predisposing Factors—We have made a definite effort to discover any general or local conditions which might have preceded the development of this syndrome in the hope that it might cast some light on its etiology. Unfortunately, we have found no constant or frequent denominator.

The commonest single event that ushered in the periodic pain was the onset of ovarian activity, for ten traced their discomfort to the menarche. Four did not have it till they gave birth to a full term child, one by cesarean section. On the other hand, several patients have noted that their intermenstrual pain had been definitely less severe since they had children. In one instance the discomfort developed after myomectomy. We have found only one or two cases that appeared shortly after marriage and none that were preceded by puerperal infection. We have one instance in which the condition was present in both mother and daughter. In the mother it came on after the birth of the third child and disappeared after the next child was born. In the daughter it began after the birth of the second child, and this young woman hopes that she may have her mother's good fortune in seeing it disappear after her next child is born. In by far the greatest majority, the symptom developed without any determinable cause.

Nor were these women of the psychoneurotic type. A cross section of the entire group represents a fairly normal, accepted, average patient, with no greater tendency toward instability than one would find in any average group. Racial characteristics play no part, as we have found this condition in Jew, Gentile and Negro. Our group also includes representatives of every social and economic level of society.

Conditions Found at Operation—Thirty of our sixty-one patients had laparotomies, twenty-one of the thirty operations were performed during the acute pain, the various operators usually expecting to find acute appendicitis or ruptured tubal pregnancy. In every instance the tubes and appendices were normal. The

operative notes are not explicit in all the early cases, and the condition of the ovaries was not recorded regularly. Nevertheless, in fifteen cases we have some record concerning the state of the pelvis and in eight of these the operator found large graafian follicles or corpora lutea, at times oozing fresh blood from the point of rupture.

These conditions are exactly like those reported by Corner and Hartman in the macaque, and by Allen, Pratt, Newell and Bland in women when they succeeded in recovering ova from the fallopian tubes.

These cases are not to be confused with corpus luteum cysts, endometriosis or chocolate cysts, although this mistake can be made easily. On pathologic examination these cases have had normal mature graafian follicles or very early corpora lutea, depending on the time of the exploration. The clinical histories also indicate the absence of any demonstrable ovarian disease, for the menses have been remarkably free from abnormalities, most of these women have borne full term children and there have been no unusual complications.

In an effort to eliminate the chronic, recurring, interval pain, operations were performed on four women, the preoperative diagnoses being either chronic salpingitis or appendicitis. At operation, these structures proved to be normal. In these cases appendectomy has not affected the course of the pain, occasionally, excision of the corpus luteum has given relief. In one, appendectomy and right oophorectomy was done two years ago. For twelve years this patient had suffered bilateral or alternate pain with every intermenstrual interval. At operation the left ovary was normal and the right presented slight cystic changes. The only effect of the operation was to eliminate the pain from the right half of the pelvis, it now is felt regularly every month in the left ovarian region.

In the preceding twenty-five cases the intermenstrual pain was in itself the only reason for surgical intervention. In the following five the intermenstrual pain was wholly incidental, the laparotomies being performed for altogether different reasons. These five cases include three hysterectomies, one salpingo-oophorectomy for tubal pregnancy and one appendectomy with excision of old graafian follicle cysts. The effect of these operations on the syndrome will further assist in localizing the source of the discomfort. These cases fall into two groups—typical and atypical.

In the typical group are four cases: two hysterectomies, one salpingo-oophorectomy and one appendectomy with excision of old graafian follicle cysts. These are typical in the way in which the intermenstrual pain reacted to the operations. The pain was relieved in the case in which the painful ovary was completely removed, it was entirely unaffected by hysterectomy, appendectomy or excision of old graafian follicle cysts. One of the hysterectomies was done for a large myoma, the other because of extensive childbirth injuries. This, we believe, is the first time that the effect of simple hysterectomy has ever been observed on the course of periodic intermenstrual pain.

The fifth case was atypical in many ways.

A Jewess aged 30 began to menstruate at the age of 13; the menses had always been regular every twenty-eight days lasting from six to seven days with profuse flow. She had conceived normally in 1930. Intermenstrual pain accompanied by spotting began in 1933. She was operated on at the Sinai Hospital in July 1935 because of uterine myomas with profuse menstrual hemorrhages. We performed the hysterectomy deliberately on the second day of the intermenstrual pain and

spotting, nine days after the close of the last menses, expecting to find signs of ovulation. The ovaries, however, showed no evidence whatever of graafian follicles or corpora lutea, in short, there was no sign of ovulation, although the menstrual cycle had been normal and the patient had the menses that accompany ovulation.

The later developments in this case are equally surprising, although they are in harmony with the operative observations.

Since July 1935 she has been completely relieved of intermenstrual pain and spotting. The pathologic diagnosis in this case was uterine myomas, endometrial hyperplasia with polyp and endometrial glands invading the uterine wall.

In 1934 Seguy and Simonnet reported a similar case which, although not as complete as ours, nevertheless is complementary in that the time of ovulation was established by the estimation of estrogenic substance and cervical mucus. We have already referred to their report. It is rather confusing that neither of these cases showed signs of ovulation, although the menses were regular and the patients showed signs which in others had indicated ovulation—rise in estrogenic substance, cervical mucus, intermenstrual pain and spotting.

Periodic Intermenstrual Pain and Pregnancy—We have seen that this pain seems to occur with ovulation. Ovulation ceases during pregnancy as far as we know, this pain should therefore disappear at that time. This has been our experience in this group of cases. The pain stops entirely with the cessation of menstruation after the women conceive and returns when the menstrual cycle again is reestablished.

Further observations on this point are needed. During the puerperium, ovulation often occurs without menstruation, many women conceive after a pregnancy before they resume the menstrual cycle. It would be interesting to find and study a case of mittelschmerz under these conditions.

Presacral Neurectomy and Painful Ovulation—Cotte²¹ of Lyons has observed that, in women with both dysmenorrhea and painful ovulation, presacral neurectomy eliminates the dysmenorrhea but has never affected the periodic intermenstrual pain. This is what one would expect because, as one of us has shown, the innervation of the ovary is quite distinct from the innervation of the uterus.

If mittelschmerz is what we think it is, a painful functional disturbance, then sympathetic denervation of the ovary may be of great benefit in relieving the pain. This operation, however, has never been devised or performed successfully.

Endometrium—We have been able to study the endometrium in six cases of intermenstrual pain. In five it was quite normal and in one it showed hyperplasia with a tendency to invade the uterine wall.

SUMMARY

In sixty-one cases of periodic intermenstrual pain for which the clinical features of the syndrome have been outlined, thirty were subjected to laparotomy.

In nine patients who were operated on while suffering intermenstrual pain there was evidence that ovulation had just occurred—ruptured follicles with varying amounts of free blood in the pelvis.

Removal of one or both ovaries is the only operation that has uniformly eliminated the recurring pain. The

21 Cotte, Gaston. *Chirurgie du sympathique pelvien en gyn.* 4 Paris, Masson et Cie 1932, p. 318. *Troubles fonctionnels du genital de la femme*, ed. 2. Paris: Masson et Cie 1931, p. 22.

has been the general experience of former observers. Excision of the acute ruptured follicle or corpus luteum has in some cases brought relief.

Supravaginal hysterectomy in two cases had no effect. In these cases the endometrium was normal.

Curettage, cauterization of the cervix, excision of old graafian follicle cysts and appendectomy have rarely affected the syndrome.

The pain seems to occur only during ovulation. We have never seen it before the menarche or after the menopause. If the ovaries are inspected during the pain, recent ovulation is found.

We have noted two exceptions to this rule. These exceptions merely indicate that further observations are needed.

The syndrome is not always persistent. In some cases it disappeared as unexpectedly as it came, untreated or after measures which would ordinarily afford no relief. We feel, therefore, that at times painful ovulation may be due to some temporary change, perhaps a mechanical, inflammatory or circulatory disturbance, and that it disappears when this situation is corrected. Thus, occasionally the syndrome has disappeared after the birth of a child, after a curettage, after the insertion of a stem pessary or even after rest in bed.

We have found no pathologic basis or explanation of this syndrome, almost invariably the pelvic organs are normal in every particular.

Women who have painful ovulation usually are fertile and bear healthy children. Therefore the syndrome does not interfere with the production of normal ova. It is an inconvenient syndrome but interferes with the patient's health only when the pain is severe or accompanied by profuse hemorrhage from the graafian follicle. We have correlated the syndrome of painful ovulation with the known facts concerning ovulation, and the data indicate that the two are synchronous.

We have presented this study not as a finished product but rather as an introduction to the further investigation of a problem that presents many unexplained features. Normal ovulation should be studied carefully. We have noted some surprising facts in even the short series that we present.

Ordinarily, ovulation proceeds so quietly and smoothly that the clinician rarely thinks of it. We feel that every gynecologic history should include specific questions concerning ovulation. As practicing gynecologists, we can say that attention to the features that accompany ovulation has enabled us to clear up several puzzling gynecologic situations and avoid erroneous diagnoses and useless exploratory operations.

1201 North Calvert Street

ABSTRACT OF DISCUSSION

DR. J. P. GREENHILL, Chicago. The occurrence of intermenstrual pain is more common than is generally believed. All who follow the suggestion of specifically questioning every female patient about this type of pain will encounter some cases. Furthermore in most cases in which the diagnosis is made with reasonable certainty, conservatism should be followed, because the only certain way to eliminate intermenstrual pain appears to be removal of one or both ovaries. This is a radical and fortunately rarely necessary procedure especially when it is considered that practically all of these women are young. In twenty cases Cotte transplanted the ovaries into the omentum and relieved all but one of the patients of their intermenstrual pain. The conditions found at operation point definitely to disturbances in the process of ovulation as the cause of this type of pain. When a bimanual examination is made

during an attack of pain, the ovary on the involved side is always tender. Eberhart explored the uterine cavity with a sound in his cases of intermenstrual pain and found unusual tenderness in some. The authors stated that the endometrium in their studies was normal in five out of six cases but they did not tell the exact stage of development of the endometrium. R. Schroeder obtained the endometrium by curettement in five cases of intermenstrual pain during attacks of pain and found that the endometrium showed the first signs of the secretion phase and the end of the proliferative phase. These changes definitely point to ovulation. In many cases of intermenstrual pain there is slight and occasionally moderate bleeding. This condition is therefore similar to the estrous bleeding of animals. Undoubtedly some, if not all, women who have a two weeks cycle of uterine bleeding have an alternation of menstrual bleeding with bleeding due to ovulation. Hence these women ovulate only once and not twice every four weeks. In most cases the pain associated with ovulation is severe for only a short time and it subsides spontaneously. However, there are instances in which disturbances in the follicle and corpus luteum apparatus of the ovary lead to extensive intraperitoneal hemorrhage. These cases resemble rupture of a tubal pregnancy and require a laparotomy. A distinguishing characteristic of most of these serious cases is that the rupture takes place between the twentieth and the twenty-fourth day of the menstrual cycle and not at about the tenth to the fourteenth day as occurs in cases of periodic intermenstrual pain.

DR. J. M. SINGLETON, Kansas City, Mo. I have not had the experience of observing so many cases. It has been my custom to ask "Have you had any intermenstrual bleeding or discharge?" and repeat it at the end of questions on menstrual function. It is strange that in our series at the Kansas City General Hospital and Kansas University more cases of this character have not been observed. With present knowledge of time of ovulation, it would seem that in the majority of cases the pain is ovarian in nature. The case the authors presented in which hysterectomy for fibroids relieved the condition and the authors' vaginal washings and cases of frank bleeding at the time of pain conclusively prove the associated uterine activity. Removal of one ovary would be ideal if curative, but castration is to be reserved for the case in which all conservative measures fail and relief is imperative. In the cases associated with internal bleeding sufficient to constitute surgical emergencies operation must be performed, and differential diagnosis in these cases should benefit by the report of the authors. I have had one case of typical intermenstrual pain under observation for a number of years. Conservative measures such as cervical cauterization for the shrinking of eroded edematous cervixes with their consequent low-grade pelvic inflammatory processes, posture, such as rest, the knee-chest position, garden work on the hands and knees for the relief of pelvic congestion, and suggestive therapy should be tried in the milder cases before resorting to surgery.

DR. CYRUS W. ANDERSON, Denver. In a paper read before the Denver County Medical Society I suggested that the process of ovulation gave rise to definite symptoms. There was a storm of protest from the society and from all over the country. "Surely if ovulation causes symptoms, some one would have noticed it long ago." There are very few women who have pain with ovulation, but at least 80 per cent will have discomfort. This discomfort is very much like that arising from flatus in the intestine. It is high up in the region of the umbilicus where fetal movements are felt in early pregnancy. Many of my patients can tell which ovary is ovulating by differentiating the side on which the discomfort is felt, and I have proved this by surgery. A woman who had been charting her menstruation and ovulation over a period of eighteen months was sent to the hospital for an appendectomy for chronic appendicitis. Just before the operation she said "I have just noticed ovulation on the left side." In removing the appendix we saw the freshly ruptured follicle in the left ovary. I have had patients report what apparently is double ovulation, ovulation first on one side and then on the other. That would account for the occurrence of dissimilar twins. Charting the time of ovulation is the key to the safe period method of contraception. Whether or not one is interested in this field of contraception it will be of value in the treatment of sterility.

I have had several cases of apparently perfectly normal couples who had lived together for two, three and even seven years without a pregnancy. A woman had been married seven years and was anxious to have a baby. She had a very definite intermenstrual pain and had avoided intercourse during that period on account of the pain. It was suggested that the couple have intercourse on the day on which she was having the pain, and within two months she was pregnant.

DR. LAWRENCE R. WHARTON, Baltimore. The remarks of Dr. Greenhill add a great deal to what I have tried to say. It may be worth while in cases of sterility, as Dr. Anderson has said, to pay attention to ovulation. I paid no attention to it until I commenced to work on this syndrome. If our ideas about this condition are correct, if it is a functional disorder in which the ovaries are normal, then of course the ideal treatment would be if possible to cut the nerve supply in some such way as Cotte tried to do and failed. Denervation of the ovaries has never been successful. If it could be done, it would relieve a good many of these women of discomfort, provided it wouldn't do any harm. Not all of the women with intermenstrual pain were operated on during the acute pain. In those in whom the acute pain was present the endometrium was of the type that Dr. Greenhill suggested, and in the others it was of the interval type because we did the operation earlier in the phase. Dr. Singleton brought up the question about the frequency of this syndrome. We don't think ovulatory pain is very common or nearly as common as some authors have stated, but it probably occurs more frequently than was previously thought. Most women have some slight evidence of ovulation that can be detected. This might be of great value in determining whether women are ovulating and whether sterility is due to that one cause.

DIAGNOSTIC ASPECTS OF ROENTGENOLOGICALLY NEGATIVE GASTRIC DISORDERS

GEORGE B. EUSTERMAN, M.D.
ROCHESTER, MINN.

This subject is significant since gross intrinsic lesions in the upper portion of the digestive tract are in the minority as the cause of chronic recurrent gastric disturbances. Moreover, my thesis permits incidental appraisal of the merits of roentgenologic diagnosis from the standpoint of the clinician.

The circumspect physician rightly regards a "negative" roentgenologic report as evidence that he is most likely in the presence of a diagnostic problem and he does not assume the commonplace attitude that there is nothing wrong with the patient. It is obviously taken for granted that such a roentgenologically negative report is submitted by a skilful and experienced roentgenologist. When made by any one less capable, a negative diagnosis must be taken with a grain of salt by both the physician and the surgeon, for lesions may too frequently be overlooked when present or diagnosed as present when absent. The causes underlying such errors of omission and commission have been instructively pointed out by the roentgenologists themselves.¹ Notwithstanding such apparently unavoidable errors, however, developments in radiology of the stomach and duodenum in the last quarter of the century have been remarkable, and they have made possible the detection of gross lesions in the stomach and duodenum in what is reputed to be 90 to 95 per cent of cases, even though

the exact pathologic nature of the lesion visualized cannot always be successfully ascertained before microscopic examination.

Thus, in the process of elimination, a negative report is of the greatest diagnostic value and would for practical purposes exclude ulcer of the stomach and duodenum, gastric carcinoma, pyloric and duodenal obstruction and duodenal dilatation from whatever cause. A negative report also would exclude roentgenologically positive forms of gastritis and the majority of the rare forms of gastric and duodenal lesions such as benign granulomatous and lymphomatous tumors, diverticula, the majority of diaphragmatic hernias and the occasional deformities caused by extensive adhesions. In their aggregate such intrinsic lesions are responsible for about a fifth of the cases of chronic gastric disturbances.² In private general practice, I am reliably informed, the percentage may not exceed 10. For present purposes, the conditions just enumerated may be regarded as roentgenologically positive disorders.

In considering roentgenologically negative gastric disorders the classification proposed by Berger³ is simple yet comprehensive. It is substantially as follows: (1) unrecognized roentgenologically positive gastric disorders, (2) roentgenologically negative disorders of the stomach itself, (3) actual or apparent gastric disturbances resulting from disease of abdominal viscera other than the stomach, and (4) actual or apparent gastric disturbances resulting from disease remote from the abdominal organs.

UNRECOGNIZED ROENTGENOLOGICALLY POSITIVE GASTRIC DISORDERS

I have shown numerically how duodenal ulcer is in our experience at the clinic the commonest intrinsic organic cause of chronic recurrent indigestion. Kirklin⁴ has pointed out that without great technical dexterity and attentive study at least a fourth of such lesions would escape roentgenologic detection, and that even under the best of circumstances about 5 per cent escape such detection. The same can be said of gastric ulcers and small carcinomatous ulcers. A fair percentage of ulcers at or just below the anastomosis following gastrojejunostomy may for well known reasons also be impossible of detection. Benign and malignant neoplasms and granulomatous processes which may produce an appreciable filling defect, however, rarely escape detection by the roentgenologist, especially when the examination is coupled with a study of the mucosal relief. Elsewhere I⁵ have pointed out how by virtue of the high posterior situation of a lesion in the stomach even a malignant process may occasionally be overlooked on initial examination when the clinical evidence of its presence may be very convincing. If gastritis

2 In the experience of Dwyer and Blackford based on a study of 3,000 cases (Dwyer M. F. and Blackford J. W. Interpretation of Gastric Symptoms. A Clinical and Roentgenologic Study of 3,000 Cases. *Radiology* 14: 38-44 (Jan.) 1930) gross lesions of the stomach and duodenum were diagnosed in only 15 per cent. In a consecutive series of 15,000 patients with chronic dyspepsia examined at the Mayo Clinic 137 per cent had duodenal deformities and niches which were interpreted as being the result of ulcer. 15 per cent had gastric ulcer and 0.3 per cent had both gastric and duodenal ulcer. These percentages accounting for a total of 15.5. A little more than 2.6 per cent had gastric carcinoma. This makes a total of 18 per cent of patients with digestive disturbances were the result of the commoner primary organic diseases of the stomach and duodenum.

3 Berger W. Die Diagnose roentgennegativer Magen- und Duodenalulcer. *med. Wchnschr.* 84: 481-484 (April 28) 1934.

4 Kirklin B. R. Duodenal Ulcers That May Escape Roentgenologic Detection. *Am. J. Clin. North America* 15: 177-184 (July) 1931.

5 Eusterman G. B. The Significance of Analysis of Gastric Symptoms in the Diagnosis of Carcinoma of the Stomach. *Am. J. Clin. North America* 14: 557-563 (Nov.) 1930.

From the Division of Medicine the Mayo Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1934.
1 Kirklin B. R. Factors of Error in Roentgenologic Distinction Between the Normal and Diseased Stomach and Duodenum. *Am. J. Digest. Dis. & Nutrition* 1: 260-261 (June) 1934.

especially in its primary subacute and chronic forms, is such a prevalent disease as some of our European colleagues would lead us to believe, many such lesions are going to be overlooked on routine roentgenologic examination. Diaphragmatic hernias, especially small para esophageal (hiatal) hernias, can also easily be overlooked on routine examination. The necessity for subsequent reexamination when any of the foregoing entities come under suspicion cannot be emphasized too strongly.

ROENTGENOLOGICALLY NEGATIVE DISORDERS OF THE STOMACH ITSELF

In this group are included the so-called functional gastric disturbances or gastric neuroses, as well as the so-called habit dyspepsias, dyspeptic disturbances associated with constitutional inadequacy and roentgenologically negative forms of gastritis, and gastric allergy. Of the three types, gastric neuroses are unquestionably the most frequent and intriguing. This entire group constitutes approximately a fourth of the cases coming under our observation in which the major complaint is of "stomach trouble."

A diagnosis of chronic nervous exhaustion or psychoneurosis in cases in which the symptoms are similar to those of visceral dysfunction should naturally be made with considerable reservation. However, the justification for such a diagnosis was recently pointed out by Macy and Allen⁶ in a study based on a series of 235 cases encountered at the clinic. It was found that such a diagnosis, made on an average of six and a half years before final examination of the patient, proved to be accurate in 94 per cent of the cases. Of interest is the fact that the gastro-intestinal tract was a point of origin of the major symptoms in the largest number of cases. One is reminded of the observation of William James that "the abdomen is the sounding board of the emotions."

Without attempting any discussion of the fundamental nature of these neuroses or of the factors apparently operative in the derangement of visceral function as a result of certain emotional tensions and states, or psychoses, I shall merely mention certain features which characterize the symptoms of gastric neuroses and which are useful in their recognition: (1) the disturbances may be of long duration yet complications or progression may be absent and the patient may be in a good nutritional state, (2) the symptoms vary in the region where they appear, are variable in degree and are frequently continuous, (3) there is lack of the sequence so characteristic of the majority of organic lesions, (4) the pain or discomfort, when present, is usually diffuse and is often projected unaccountably, (5) while the patient may complain bitterly of his disturbances or sensations during waking hours, they may be completely absent at night, (6) intermittent digestive disorders are often coincident with, or follow, emotional stress, (7) physical disability is frequently marked and entirely out of proportion to the severity of the complaint, and (8) there is usually present the evidence of other stigmas of a psychoneurotic or hysterical personality.

While I have never entertained any doubt as to the existence of the acute forms of gastritis, I have much more hesitancy about making the diagnosis of chronic gastritis in the absence of roentgenologic or gastroscopic confirmation. In light of recent developments

it behooves one to be more "gastritis conscious." Faber⁷ insisted that antral gastritis may give rise to symptoms indistinguishable from those of ulcer. In fact, Katsch⁸ maintained that gastritis in its various forms may simulate any organic gastric or duodenal disease. It is reasonable to presume, therefore, that many of the roentgenologically negative forms of gastritis are overlooked or misinterpreted. Alimentary allergy as a cause of chronic recurrent gastric disturbance is more frequently regarded as a possibility now than formerly. A personal or family history of asthma, hay fever, angioneurotic edema, urticaria, eczema or other forms of allergic disease makes essential the exclusion of gastric allergy in the absence of any other plausible explanation. In such cases the chief underlying disturbance is spasm of the smooth musculature and this may give rise to pains and associated symptoms simulating those of ulcer or to attacks of vomiting, with or without participation by the intestinal tract.

GASTRIC DISTURBANCES RESULTING FROM DISEASE OF ABDOMINAL VISCERA OTHER THAN THE STOMACH ITSELF

The preponderance of abdominal visceral disease other than of the stomach or duodenum in the causation of recurrent dyspepsia gave rise to the surgeons' bon mot "the stomach is the fire alarm box, the fire is somewhere else." From a third to two fifths of all chronic gastric disorders have their origin in disease of the gallbladder, appendix, pancreas, liver, small bowel, colon or such conditions as epigastric hernia or helminthiasis. As neither time nor space permits detailed discussion of this phase of the subject, my remarks will be limited to a brief consideration of some of the noteworthy features.

Chronic calculous or noncalculous cholecystitis is the most common cause of the distressing chronic, recurring types of dyspepsia affecting adults. We at the clinic see each year 60 per cent more cases of cholecystic disease than of chronic gastric and duodenal ulcer combined. Dwyer and Blackford demonstrated that whereas 15 per cent of their dyspeptic patients harbored organic lesions of the stomach and duodenum, 21.3 per cent had disease of the gallbladder. One should always entertain the suspicion of cholecystic disease in the case of a middle-aged obese patient, especially a woman, who is not obviously neurotic or aerophagic and who has recurrent attacks of epigastric discomfort, gaseous distress, belching, or a sense of fullness. In most cases the dyspepsia is selective in type and the symptoms are more likely to appear soon after meals, although ulcer-like manifestations occur sufficiently often so that many such patients are erroneously treated for ulcer. Cholecystographic examination is indispensable to detection of the disease, especially in cases in which the symptoms are mild and the patients have not experienced the characteristic biliary colic. Of course, in the absence of a typical train of symptoms and signs a normal cholecystographic response argues for conservatism. Occasionally one sees cases wherein the clinical evidence of cholecystic disease is convincing and other lesions have been satisfactorily excluded but in which the cholecystographic appearances are normal. At operation one of two types of pathologic condition is usually revealed: chronic

7 Faber K. Chronic Gastritis. Its Relation to Achylia and Ulcer. *Lancet* 2: 901-907 (Oct. 29) 1927.

8 Katsch G. Die Diagnose Gastritis. *Klin. Wchnschr.* 14: 411-414 (March 23) 1935.

6 Macy J. W. and Allen E. V. A Justification of the Diagnosis of Chronic Nervous Exhaustion. *Ann. Int. Méd.* 7: 861-867 (Jan.) 1934.

noncalculous cholecystitis of grade 2 or 3 or a fairly well preserved gallbladder containing small stones

The clinical, surgical and experimental evidence for appendiceal dyspepsia has been presented by Graham and Guthrie,⁹ by Moynihan¹⁰ and by Braithwaite,¹¹ respectively, in a convincing manner, and a host of other competent investigators have made valuable contributions. Notwithstanding this fact, and realizing that in some perplexing or obscure cases of indigestion permanent cure was obtained on removal of a diseased appendix, I am of the opinion that this form of dyspepsia as a disease entity looms less important now than formerly. The needless sacrifice of many normal appendices in the past made essential stricter diagnostic criteria as regards this form of dyspepsia. In the last few decades routine exploration of the upper abdominal organs at the time of removal of the appendix and more careful preoperative roentgenologic study of the stomach and biliary tract disclosed the fact that lesions in the upper part of the abdomen were more frequently associated with disease of the appendix than was heretofore realized. In Dwyer and Blackford's compilation of 3,000 cases a chronically diseased appendix was the cause of gastric symptoms in 5.5 per cent.

Disease of the liver may provoke epigastric pain through enlargement of that organ, or hepatitis and indigestion may result from the associated gastritis, or serious hemorrhage may occur as the result of esophageal varices. One is frequently surprised at the insidious onset of these conditions without obvious cause, and the silent progression of the disease in cases of hepatic cirrhosis, the portal variety in particular. In the absence of icterus and anasarca, the diagnosis can usually be established by careful physical examination, by means of tests of hepatic function, and by roentgenographic examination of the esophagus for evidence of varices without being obliged to resort to abdominal exploration or laparoscopy.

The frequency of pancreatic disease as a cause of epigastric pain or digestive disturbances, or both, is not generally appreciated, largely because of difficulties in diagnosis. Even the acute forms of pancreatitis, with which I am not directly concerned here, are often mistaken for some other acute abdominal condition. Subacute and chronic inflammatory lesions and malignant neoplasms give rise to gastro-intestinal disturbances that often dominate the clinical picture. Subacute and chronic pancreatitis is usually the result of, or associated with, cholecystic disease, duodenal or gastric ulcer, and obesity. In recent years some authorities have stressed the importance of duodenal diverticula situated near the papilla of Vater as a cause of pancreatitis. Von Bergmann and his associate¹² stated on the basis of experimental and clinical observation that the pain in the milder forms of pancreatitis appears at the height of physiologic activity of the organ, which is usually two or three hours after meals. In addition they commented on the frequent left epigastric situation of this pain, with extension to the back, and on the persistence of a half-girdle zone of hyperalgesia, which according to them seemed to be of marked diagnostic significance. Such pain must be dis-

tinguished from that of penetrating or perforating ulcer, from transposed or contralateral pain of cholecystic disease and from the pain of diaphragmatic hernia, renal and colonic lesions, sciatica and lumbago.

In a review of eighty-eight verified cases of primary malignant neoplasms of the pancreas without jaundice, Wilbur and I¹³ discovered that the presenting or predominant symptoms in sixty-four of these cases were purely gastric in nature. Next in order of frequency were pain (chiefly epigastric, with posterior projection), loss of weight, and the presence of a palpable mass in the upper or middle portion of the abdomen.

In an attempt to establish a diagnosis of pancreatic disease after satisfactory routine exclusion of lesions in the stomach, colon and kidneys, many laboratory procedures have been advocated. Comfort¹⁴ has shown that an increased activity of the serum lipase appears to be a very efficient test for pancreatitis, less so for pancreatic carcinoma unless the pancreatic duct is obstructed by the latter. But neoplasms and cysts often produce defects in contiguous organs, such as the duodenum, antrum pylori and colon, as a result of direct invasion or pressure, defects which are recognizable on roentgenologic examinations in an appreciable number of cases. Such objective signs, while themselves easily misinterpreted, are of great diagnostic value when properly correlated with the other symptoms and signs elicited.

Many individuals with intestinal disorders, functional or organic, seek relief for what they earnestly believe to be "stomach trouble." Sometimes there are actual associated gastric lesions, as in cases of chronic gastroenteritis, or reflexly engendered gastric disorders of a spastic nature, as in cases of stenosing lesions of the small bowel, in spastic colitis and in "irritable" colon. In the early stages of carcinoma of the proximal part of the colon and also in some cases of ileocecal tuberculosis, ulcer-like symptoms may be manifested. However, routine inquiry into bowel function, often disclosing the past or present existence of diarrheic, bloody or mucoid movements, of obstipation or of segmented stools, may supply the first clue as to the real nature of the trouble. Such a clue is strengthened when the pain, discomfort or tenderness is at the umbilical level or lower and if it follows the approximate course of the colon.

Epigastric hernia is one of the various causes of pain of parietal origin simulating visceral disease, that has been well described by Moschowitz.¹⁵ Pemberton and Curry¹⁶ reviewed the symptoms in 296 cases of epigastric hernia in which patients were submitted to operation. Their study, however, indicated that visceral disturbances which could be ascribed solely to the hernia were infrequent and variable in nature, ranging from infrequent ulcer-like manifestations to difficult abdominal cramps bearing no relation to alimentary or exertion.

Gastric disturbances resulting from Addison's disease, intestinal parasites, tuberculous peritonitis, retroperitoneal adenopathy of an inflammatory or lymphomatous nature, and disease of the lower thoracic vertebrae (arthritis, caries, metastasis), while perhaps of

⁹ Graham Christopher and Guthrie Donald. The Dyspeptic Type of Chronic Appendicitis (Pyloric Spasm) with Differential Diagnosis. *J. A. M. A.* 64: 960-963 (March 19) 1910.

¹⁰ Moynihan B. G. A. Remarks on Appendix Dyspepsia. *Brit. M. J.* 1: 241-244 (Jan. 29) 1910.

¹¹ Braithwaite L. R. The Flow of Lymph from the Ileocecal Angle and Its Possible Bearing on the Cause of Duodenal and Gastric Ulcer. *Brit. J. Surg.* 11: 7-26 (July) 1923.

¹² von Bergmann Gustav and Goldner Martin. Funktionelle Pathologie eine klinische Sammlung von Ergebnissen und Anschauungen einer Arbeit richtung Berlin Julius Springer 1932.

¹³ Eusterman G. B. and Wilbur D. L. Primary Malignant Neoplasms of the Pancreas. A Clinical Study of Eighty Eight Cases Without Jaundice. *South. M. J.* 26: 875-883 (Oct.) 1933.

¹⁴ Comfort M. W. Serum Lipase Its Diagnostic Value. *Meet. Mayo Clin.* 10: 810-813 (Dec. 18) 1935.

¹⁵ Moschowitz Eli. Pains of Parietal Origin Simulating Visceral Disease. *J. A. M. A.* 88: 897-899 (March 19) 1927.

¹⁶ Pemberton J. del. and Curry F. S. The Symptoms of Epigastric Hernia. Analysis of 296 Cases. *Minnesota Med.* 18: 1 (Feb.) 1936.

significance than the entities just considered, always obtrude themselves when least expected. If for example the pigmentation, asthenia or hypotension of suprarenal insufficiency is delayed in appearance or is not a prominent sign, the cause of the anorexia, epigastric pressure, nausea, vomiting and diarrhea may be misinterpreted. As the upper portion of the digestive tract can be infested with *Giardia lamblia*, *Strongyloides stercoralis*, *Ascaris lumbricoides* and hookworm, as a result of which indigestion, abdominal pain, anemia or hemorrhage can occur, parasitism should be excluded, especially if the patient resides in a subtropical or tropical region.

GASTRIC DISTURBANCES RESULTING FROM DISEASE REMOTE FROM THE ABDOMINAL ORGANS

With fairly satisfactory exclusion of the roentgenologically positive, roentgenologically negative, and the extragastric abdominal disorders just discussed, it is not unlikely that some pathologic process in organs remote from the abdominal viscera, or some systemic toxemia is present in larval, latent or not easily recognizable form. Systematic examination for evidence of those diseases which would most likely give rise to indigestion should be made, granted that complete anamnesis, careful physical examination, and routine urinalysis, blood count and flocculation or serologic tests have so far not furnished a clue. Disease of the circulatory, pulmonary, nervous or urinary systems deserves first consideration. Next in order of importance are diseases or dysfunction of the endocrine organs, deficiency diseases (pernicious anemia, pellagra and sprue in particular), toxic states induced by noxious gases, heavy metals and drugs, and mordant use of tobacco and alcohol. One should be especially mindful of the role that carbon monoxide and lead might be playing in obscure cases and to what extent a patient's occupation or environment might expose him to industrial forms of poisoning. In the aggregate, at the clinic these diseases and intoxications account for from 15 to 20 per cent of cases of chronic digestive disorders.

A few observations concerning this group as a whole might serve a more useful purpose than detailed consideration of each entity. For example, one may speculate why organs as remote from the stomach or duodenum as the gonads, myocardium, lungs or kidneys can give rise to recurring gastric disturbances, so marked at times as to overshadow any symptoms that could be directly attributable to the involved organ itself. The varied factors giving rise to such disturbances, as well as the nature of their morbid physiologic and anatomic effects on the stomach and its continuations, are gradually being better understood. Included among such factors are a common innervation, so that disease of one organ may, for example, reflexly produce spastic and hypersecretory disturbances in the other. Another factor is a circulatory interrelationship, so that the circulatory failure of hypertensive heart disease, for example, may produce passive congestion in the stomach, giving rise to impairment of gastric motility and secretion and even to degenerative changes in the gastric mucous membrane. The gastric disturbances associated with various endocrinopathies, especially disease of the gonads and the adrenal, pituitary and thyroid glands may in large measure be the result of autonomic imbalance owing to the intimate relation of the sympathetic and parasympathetic nervous systems to the endocrine glands and of the former in turn to the digestive organs.

Only on infrequent occasions are gastric disturbances the sole expression of a disorder remote from the stomach, I have seen such instances, however, in cases of active pulmonary tuberculosis, in toxic or uremic states as a result of prostatic hypertrophy, pyelonephrosis or chronic glomerulonephritis, and in cases of pernicious anemia and sprue. A renal stone may occasionally give rise to gastric disturbances closely simulating duodenal ulcer, but it has been my experience that the nature, situation and projection of the pain usually arouse suspicion as to the true site of the trouble. One derives comfort from the fact that the routine systematic physical examination, urinalysis and flocculation test, and if necessary a few other well directed laboratory investigations, will usually disclose the true nature of the underlying cause no matter how irrelevant the subjective complaint may appear to be. The nature and degree of gastric disturbances vary widely because the direct and indirect influences on gastric function of various disorders remote to the stomach are variable.

An increasing number of carefully controlled studies of gastric secretory and motor function and of the condition of the gastric mucous membrane as determined by roentgenologic examination of the mucosal relief, or gastroscopy, disclose a higher incidence of such motor and secretory disturbances and of inflammatory changes in the gastric mucous membrane in disorders remote from the stomach than has heretofore been realized. The symptoms engendered by such disturbances permit of rough classification into the following types: (1) vague, mild or nondescript, characterized by "gas," epigastric fulness, mild anorexia or nausea, (2) those of the nausea and vomiting type, as seen in the painless form of tabetic gastric crises, in migraine, uremia and acute hyperthyroidism, and in some cases of cholecystic disease, (3) the catarrhal gastritis complex, in advanced cases the symptoms and signs being strongly suggestive of gastric cancer, (4) those of the intestinal type, characterized by (a) the "irritable" colon complex or (b) chronic recurrent diarrhea, usually in association with achlorhydria, (5) the hemorrhagic type, in which hematemesis or melena is the predominant or exclusive symptom, as in portal cirrhosis, erosive and ulcerous gastritis, and ulcer in Meckel's diverticulum, (6) ulcer simulating, a not uncommon type, and (7) the pain predominating type, as seen in the painful form of tabetic gastric crisis, in the abdominal form of angina pectoris, in periarteritis nodosa, and in the various sclerotic vascular abdominal conditions, such as are described by Ortner.¹⁷

SUMMARY

The efficiency of modern roentgenologic diagnosis permits classification of diseases of the stomach into roentgenologically positive and roentgenologically negative disorders. The former (ulcer, cancer, and so on) constitute about a fifth of the cases of chronic dyspepsia coming under observation at the clinic, roentgenologically negative disorders which have been classified and described constitute the remainder.

Gastric disturbances reflexly engendered by disease of abdominal viscera other than the stomach itself or its continuations in my opinion exceed in importance the gastric neuroses, because of their nature and extent and the comparative frequency of their occurrence. They constitute from a third to two fifths of all cases. The neuroses constitute about a fourth of the total.

¹⁷ Ortner Norbert. *Körperschmerzen und ihre Differentialdiagnostik*. ed. 4. Vienna Urban and Schwarzenberg 1931 pp 45-46 695

In from 15 to 20 per cent of cases, gastric disturbances are attributable to disease of organs remote from the stomach, but only on infrequent occasions are such gastric disturbances the sole expression of an extragastric disorder. Complete and systematic anamnesis and physical examination, and a few simple well chosen laboratory studies, will usually disclose the true nature of the underlying cause no matter how irrelevant the subjective complaint may appear to be.

ABSTRACT OF DISCUSSION

DR. EDWARD H. SKINNER, Kansas City, Mo. The radiologist who is expected to be of service to his consulting physician must be more than the individual who sees patients file by him in a routine manner before the fluoroscope. Undoubtedly the radiologist should see his patients not only by means of an x-ray tube but by means of the eyes. The increasing number of emotional disturbances producing gastric symptoms may be due to the progress or decline of civilization. Sometimes it is easy to classify the symptom complex. Shakespeare promoted one grouping when he said "Yon Cassius has a lean and hungry look, He thinks too much." It is easy to agree that Cassius had ptosis, a gastric ectasia and a long, indifferent colon, all without true disease but with many vagaries of function. On looking at the large, fleshy well fed executive, one realizes that his gastric trouble is not because he thinks too much but because he eats too much and drinks too much. Consequently he burps too much.

Radiologists and clinicians should approach the problem of diagnosis on other than purely medical lines. The recognition of the psychologic aspects are too easily disregarded. The influences of the sympathetic nervous system in promoting functional displays that may turn into pathologic disasters cannot be overlooked. I would much prefer to have a clinician with imagination as well as intelligence. Give me one whose boyhood had Conan Doyle and Mark Twain or even Nick Carter to stimulate his growing brain. I feel confident that he would be able to worm a good clinical history out of a patient better than the doctor whose anemic boyhood found solace in Bunyan's "Pilgrim's Progress." All should realize that these emotional disturbances with negative examinations by radiologists require more judgment and more clinical imagination than definite pathologic lesions. The first observation that Cannon brought out by means of the x-rays was that, if one gives a cat food plus anger, one obtains spasm. On the contrary, give an individual food plus pleasure and one creates an appetite. Those who pursue roentgenographic examinations should avoid the exaggeration of the importance of spastic conditions and any implications of stasis that they may think they see by the fluoroscope. Let us not translate these shadows into diagnostic values because we see them once, for they are entirely too ephemeral. The radiologist will meet this problem of diagnosis more successfully in the presence of negative x-ray observations by combining a careful history. The inexperienced possessor of x-ray apparatus exaggerates, confuses and confounds congenital defects, colitis adhesions, kinks, and nonfillings to an alarming degree. These are some of the things which have stimulated Dr. Eusterman to tell us that we must study our patients we must analyze. His analysis of the field of the negative virtues and deficiencies of the roentgen ray has been most illuminating.

DR. NELSON G. RUSSELL, Buffalo. Many of Dr. Eusterman's patients have been culled over by the internist before they have gone to him and most of the simpler problems have been solved and I think that the general practitioner speaks in terms of the greatest good to the greatest number and if he can save ninety-nine he is willing to let the one that went astray be worked up more thoroughly. The problem is often the acute abdominal conditions those which should be operated on immediately and which would lose a good deal of their opportunities by being studied too long. One realizes one's inefficiencies in making a diagnosis in many of the chronic cases and is only too glad to have every aid one can get. The point in making the diagnosis is not so much making it on the condition of the patient as it is on the ability of the man who studies him. Dr. Eusterman brought that out very clearly.

We have all known it before, but we have hesitated to talk too freely. In regard to the neurotic cases, we all have them and get results with them, and a man's message is just as much on the personal side as on that of his morals or methods. Whether he does it with one method of healing or another or, as some do, by making a very thorough examination and saying that everything is all right or admits for the general well being of the patient that the results are all right, the results are about the same. Dr. Eusterman's paper is a contribution on one of the best elements in any problem or any policy. I believe in his enlightened realism, and that is where I should classify his contribution today.

DR. RUDOLPH SCHINDLER, Chicago. Is it practical to use the term "gross lesions" just for carcinoma and ulcer? One sees that a patient has an atrophic gastritis and large mucosal hemorrhages and terrible pains and knows one cannot cure him. Another patient is seen over ten years. He has hypertrophic ulcerative gastritis. He cannot be helped. Are not these gross lesions of the stomach? Are stomach disorders and disturbances in remote organs accidental symptoms or is one the primary and which one? A patient comes with what a marked hypochondria that one declines gastroscopy. He insists and complete atrophy of the mucous membrane is found. What is the connection? Henning has shown that in tuberculosis chronic hypertrophic gastritis is very common. Moutier has observed changes of the gastric mucosa associated with certain dermatoses. It is possible that an allergic factor causes changes of the mucosa of the stomach as well as of the skin, and it is also possible that the stomach which is chronically inflamed allows allergic products to enter the circulating blood. These, in my opinion, are important questions.

PAPILLOMA AND CARCINOMA OF THE BLADDER IN DYE WORKERS

G. H. GEHRMANN, MD

Medical Director E. I. du Pont de Nemours & Company
WILMINGTON, DEL.

Rehn¹ in 1895 detected two cases of papilloma and one of carcinoma of the urinary bladder in employees of the German dye industry. He suggested at this time that these tumors might have been caused by exposure to aniline. Grandhomme,² a factory physician, viewed this theory with much skepticism, pointing out that thousands of workers who had been exposed to similar conditions for many years had not shown evidence of bladder tumors. Later evidence, gathered by Rehn,³ Schedler,⁴ Leichtenstern,⁵ Posner,⁶ Wendel,⁷ Strauss⁸ and Bardenheuer,⁹ substantiated Rehn's earlier contentions and by 1904 dye manufacturers were convinced that there was a relation between occupational exposure and the development of bladder tumors.

Leuenberger⁹ in 1912 reported eighteen cases of bladder tumor occurring among dye manufacturers.

Read before the Section on Preventive and Industrial Medicine at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

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2. Grandhomme, Wilhelm. Die Theerfarben-Fabriken der Actiengesellschaft Farbwerke vorm. Meister, Lucius & Brunner zu Höchst a. M. in sanitärer und sozialer Beziehung. Heidelberg, G. Koster, 1914.

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5. Posner, C. Der Urogenitalkrebs in seiner Bewertung für das Krebsproblem. Ztschr. f. Krebsforsch. 1: 4, 1904. Zum Blasenkrebs bei Anilinarbeitern. Ztschr. f. Urol. 18: 418, 1924. Ueber Blasenkrebs bei Anilinarbeitern. Deutsche Klinik, 10: 455, 1905.

6. Wendel, W. Beiträge zur Lehre von den Blasenentumoren. Mitt. a. d. Grenzgeb. d. Med. u. Chir. 6: 15, 1900.

7. Strauss, F. in discussion on Rehn, p. 249.

8. Bardenheuer, in discussion on Rehn, p. 233.

9. Leuenberger, S. G. Die unter dem Einfluss der Farbenindustrie beobachtete Geschwulstentwicklung. Beitr. z. k. Chir. 80: 203, 1912.

workers at Basel. He also reported at the same time a study of all bladder tumors at the Basel clinic, showing that 50 per cent occurred among dye workers and that the incidence was thirty-three times greater in dye workers than in non-dye workers.

In 1925 the German government passed a law making bladder tumors in the dye manufacturing industry compensable.

The first aniline tumors to be reported in this country were detected in 1931. Prior to 1914 European countries, principally Germany, manufactured about 80 per cent of the entire output of dyes. It was subsequent to 1914 that the dye industry was developed on a large scale in this country. A period of sixteen years elapsed before the first aniline tumors developed to the point of recognition in America. This period closely corresponds to the average time of exposure necessary to produce these tumors.

ETIOLOGY

Prolonged exposure to relatively low concentrations of certain intermediates produced during the manufacture of dyes and classified as aromatic amines (aniline, alpha and beta naphthylamine and benzidine) are known to have caused the development of tumors in certain individuals. These materials have been classified as causative agents because of the incidence of tumors among the workmen engaged in their handling. This evidence is admittedly not conclusive, and it is quite possible that many other materials or combinations of materials may later be included as causative agents.

It is to be understood that, although it is accepted that certain chemical compounds of the nitro and amino group are responsible for the production of papillomas and carcinomas of the urinary bladder, the exact nature of these compounds is by no means clearly understood, neither is the mechanism of development.

Experimental production of bladder tumors has been attempted for many years with predominantly unsuccessful results. Perlmann and Staehler¹⁰ were able to produce tumors in seven rabbits of a group of seventy by administering amino compounds by daily subcutaneous injections. Six of these tumors occurred among forty animals treated with beta naphthylamine and in only one in a group of thirty treated with aniline. This work confirmed the existence of chemical compounds capable of producing tumors of the urinary bladder.

ABSORPTION ROUTES

The carcinogenic compounds already mentioned enter the circulation through three routes: (a) respiratory, (b) cutaneous and (c) gastro-intestinal. It is generally agreed that the most important route of entrance is the respiratory tract, in the form of dust and fumes. Aniline, as has been demonstrated by the incidence of acute poisoning occurring in industry, is readily absorbed through the skin. The skin absorption of solid compounds such as alpha and beta naphthylamine is questionable.

Absorption through the gastro-intestinal tract is probably of the least importance. However, it must be remembered that present knowledge indicates a long period of exposure to low concentrations as an etiologic

factor. Therefore, any gastro-intestinal absorption should be considered as of more or less importance, despite the low solubility of these compounds.

AGE INCIDENCE

Table 1 shows the age distribution in twenty-four cases of carcinoma. These figures do not indicate occurrence at any particular age. The fact that they show a somewhat higher incidence after 30 is due to the insufficient time of exposure prior to that age.

Table 2 shows the exposure in years and the period of incidence of the twenty-four cases shown in table 1.

Table 3 shows the age distribution of thirty-nine cases of papilloma. Here again the age group shows no significant incidence.

Table 4 shows the period of incidence of exposure in the papilloma group by years.

From these tables it is evident that five years is the minimum and twenty-five years the maximum time of exposure for the development of tumors. It should be pointed out, however, that the maximum period of exposure—twenty-five years here shown—represents

TABLE 1—Age Distribution in Twenty-Four Cases of Cancer

20-30	31-35	36-40	41-45	46-50	51-60	61-65
0	3	5	4	5	5	2

TABLE 2—Exposure in Years in Cases of Cancer

5-10	11-15	16-20	Average
6	13	5	13.2 years

TABLE 3—Age Distribution in Thirty-Nine Cases of Papilloma

20-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65
2	2	5	5	6	9	4	4	2

TABLE 4—Period of Incidence of Exposure in Papilloma Group

5-10	11-15	16-20	21-25	Average
16	14	8	1	12.07 years

the maximum period of exposure in this series of cases and that more cases will develop as time goes on. One peculiarity of these tumors is that they continue to develop even after removal from further exposure. In Germany they have occurred as long as twenty-five years after workers have changed their occupation.

DIAGNOSIS

The classic symptoms of tumors of the urinary bladder are hematuria, frequency, urgency, burning and pain. These symptoms as a group occur in our experience only in those cases which are well advanced. The diagnosis in this series was made by periodic cystoscopic examination and the classification of the tumors by biopsy. Prior to cystoscopic examination, five of the twenty-four carcinomas showed hematuria. Symptoms of frequency, urgency and burning were so inconsistent as to be almost negligible as a diagnostic aid. It has been our experience that cystoscopic examination is the only safe method of early diagnosis of these tumors.

Tumors may be single or multiple, papillary or sessile, infiltrating or noninfiltrating, ulcerating or non-

¹⁰ Perlmann, S. and Staehler, W. Ueber kunstlich erzeugte Geschwulste der Blase. Klin. Wchnschr. 11, 1932 (Nov. 19). Zur Ätiologie der Blasengeschwulste, Ztschr. f. Urol. 27, 1932. Experimentelle Erzeugung der Blasengeschwulste, Ztschr. f. Urol. 36: 139, 1933.

ulcerating, malignant or benign. The incidence of carcinoma in this group of sixty-three cases is thirty-eight. An analysis of 124 German cases by Gay¹¹ indicates that the incidence of carcinoma was twice that of papilloma. This difference may be explained by the difference in methods of detection in Germany and in this country. The sixty-three cases reported here were all detected by routine cystoscopic examinations. The German workmen were not subjected to cystoscopic examination except in those cases which showed gross or microscopic hematuria. Comparison of these two groups gives further evidence that routine cystoscopic examination is the safer method of early detection. All bladder tumors should be regarded as potentially malignant regardless of their histologic structure. There have been cases in this group which cystoscopically appeared as papillomas but on microscopic examination, although predominantly benign, have shown unmistakable evidence of carcinomatous invasion.

Aniline tumors may be located anywhere in the bladder, the most frequent site, however, is the paratrighonal space. Observations indicate a biologic change which possibly affects the entire bladder wall. The appearance of repeated tumors in various locations and multiple tumors would tend to confirm this point of view and disprove the contention that the damage is localized.

PATHOLOGY

The histologic structure of aniline tumors does not differ from tumors of unknown etiology. They occur in all gradations, from the slowly growing villous papilloma, which may remain latent for many years, to the rapidly growing, destructive and anaplastic carcinoma, which produces early and widespread metastasis.

TREATMENT

The treatment of aniline tumor does not differ from the treatment of tumors of unknown etiology. It is to be emphasized, however, that the best results from treatment may be expected with early diagnosis. Benign papillomas are easily destroyed by fulguration, with an excellent prognosis, while carcinomas require much more extensive procedures and the prognosis is not so good.

PREVENTIVE MEASURES

Preventive measures are divided into two groups: (a) plant operative control and (b) medical control. The plant operative measures consist of manufacturing processes that provide complete protection against any exposure from dust or fumes. These carcinogenic materials must be manufactured in a completely closed system, which must be maintained in perfect working condition and operated under most rigid rules. Particular care must also be maintained over the mechanical group whose duty it is to make repairs on this equipment.

Exhaust ventilation designed to remove any dust or fumes that may escape from any of the equipment is essential. The final disposition of exhausted air is extremely important and the ventilation discharge should be sufficiently remote from all operations to prevent contamination in any plant area. Adequate measures of production in Germany have so successfully protected the workers that no new cases have developed in men who have been employed in these factories since the installation of their protective facilities. There

are, however, some tumors still developing in workers who were exposed during the time when the protective measures were not in operation.

MEDICAL CONTROL METHODS

Every applicant for work in areas where he will be exposed to aniline, alpha and beta naphthylamine and benzidine should have a cystoscopic examination in addition to a regular complete physical examination. Any disease of the genito-urinary system is a contra-indication to employment, as is family history of cancer, history of hematuria or venereal disease. No applicant for this type of work should be accepted who is under 21 or over 40 years of age.

Cleanliness is essential in the operation. Beards and mustaches must be removed. Each workman must have a complete suit of working clothes, including head covering. This clothing must be laundered at least once a week and kept in a special locker which is separated from the locker for street clothing. A shower bath, with warm water and soap, should be taken at the end of each shift. These rules apply to all mechanics making repairs in these operations.

All workers should have a complete physical examination and cystoscopic examination once a year. Every three months there should be a complete urinalysis and with the appearance of macroscopic or microscopic blood, cystoscopic examination is indicated.

Any case that has ever shown tumor or localized hemorrhagic areas should be examined cystoscopically every three months. Since removal from further exposure does not lessen the liability to further tumor development, we recommend, in order to keep the number of exposures to a minimum, returning patients with positive signs to their original work after they have been operated on.

PROGNOSIS

The prognosis is good in cases of benign tumor. However, further growths may occur at any time and may be primarily benign or malignant. The prognosis in malignant aniline bladder tumors in general is not favorable. Simon believes that they are biologically different, run a slower course and respond better to therapeutic procedures.

CONCLUSIONS

1. Papilloma and carcinoma of the urinary bladder are caused by long exposure to certain nitro and amino compounds. The average time of exposure necessary to produce tumors is twelve years.

2. Tumors may be single, multiple, benign or malignant. All benign tumors should be considered potentially malignant.

3. Early diagnosis is essential and the periodic cystoscopic examination is the only safe method of detecting these tumors early.

4. Proper methods of plant control and medical supervision will eliminate the incidence of these tumors.

7 West Tenth Street.

ABSTRACT OF DISCUSSION

DR. VICTOR D. WASHBURN, Wilmington, Del. From December 1929 to the present time there have been under treatment sixty-three men who had neoplastic disease of the urinary bladder as a result of their occupation as dye workers. Of this number there have been four deaths from carcinoma of the bladder, a death rate of 6 per cent. There has been one death from carcinoma of the head of the pancreas. In the autopsy the patient was found to have a small neoplasm of the urinary bladder and one accidental death of a man who

¹¹ Ferguson, R. S., Gehrmann, G. H., Gay, D. M., Anderson, L., and Washburn, V. D. Symposium on Aniline Tumors of the Bladder. *J. Urol.* 31: 121 (Feb.) 1934.

viously had a tumor of the bladder. There are six men under treatment at present and six men have been under treatment during the last six months. In other words approximately 75 per cent of our patients are alive and free from tumor, 19 per cent are either under treatment or have been recently treated, and 6 per cent are dead. Eliminating the accidental death and the liver carcinoma death and seventeen men whose records were not easily accessible I can report that twenty-five men when first seen presented no symptoms, subjective or objective and nineteen presented symptoms such as hematuria and urinary frequency. All of the twenty-five men without symptoms are alive, six of them classified as having papilloma, six papillary carcinoma grade 2, two papillary carcinoma grade 3 and eleven did not have a biopsy. Of these twenty-five men, nineteen responded to fulguration through the cystoscope, one ungraded required high voltage x rays, one with a grade 3 growth has received fulguration radon implantation and high voltage roentgen therapy. In one similar case fulguration and open operation were given, in one grade 2 fulguration and high voltage roentgen therapy. It is believed that these results are superior to those usually obtained and for the following reasons: 1. Discovery of the disease in its incipience by routine cystoscopy. 2. Lower age incidence with consequent longer expectancy of life. 3. Treatment predicated on biopsy, classification and grading of each case. 4. Papillomas and carcinoma, grade 2 treated by fulguration.

DR. J. N. BAKER, Montgomery, Ala. I am wondering why chronic exposure to this particular chemical irritation would not cause damage to the renal cells and to the epithelium lining of the pelvis of the kidney and the ureter. I should like the author to explain why the bladder mucosa alone seems to be vulnerable.

DR. W. F. VON OETTINGEN, Wilmington, Del. I may add that in my opinion the reason why these tumors are mostly located in the trigonal region is that the urine carries the toxic material and this comes in close contact with the bladder wall. Whereas in the kidney pelvis and ureter there is a constant flow and in the bladder there is a stationary condition depending on the conditions of the urine such as pH and the concentration of the excreted urine, one may expect precipitation on the bladder walls, especially in the trigonal region. In experiments being carried on at present we have not yet succeeded in producing tumors but we have seen pictures similar to those occasionally seen as the first symptoms in these workers. In the experimental animals (dogs) the first signs are not located in the trigonal region but in the anterior wall, since the animal is walking on four legs and thus the sedimentation of anything dissolved in the urine has a different topographic location.

DR. GEORGE H. GEHRMANN, Wilmington, Del. I am unable to answer the question at this particular moment and so far as I have been able to determine, the investigators in Germany have been unable to answer this question. It is quite possible that Dr. von Oettingen, who is carrying on experimental work on this particular subject at the Haskell Laboratory of Industrial Toxicology, may develop information which will in the future enable us to answer this particular question. Can you add anything to this, Dr. von Oettingen?

The Pelvis at Birth—The pelvis of the child at birth is partly bony and partly cartilaginous. The innominate bone does not exist as such, its place being taken by the ilium, ischium and pubis which are united by a large Y-shaped cartilage, the three bones meeting in the acetabulum. The iliac crests and the acetabula as well as the greater part of the ischiopubic rami are entirely cartilaginous in structure. The cartilaginous portions of the pelvis gradually give place to bone but complete union in the neighborhood of the acetabulum does not occur until about the age of puberty and occasionally even at a later period. Indeed we may say that the innominate bones do not become completely ossified and fully developed until between the twentieth and twenty-fifth years. Each innominate bone is developed from twelve centers of ossification.—Stander H. J. Williams *Obstetrics*, D. Appleton Century Company, New York, 1936, page 18.

FRACTURE OF THE NECK OF THE FEMUR

EVALUATION OF THE VARIOUS METHODS ADVANCED FOR TREATMENT

PAUL B. MAGNUSON, M.D.
CHICAGO

To appreciate the value of methods for the treatment of fractures, it seems reasonable first to have clearly in mind the various types of fracture and the angles at which they occur. In other words, let me define the terms. This should be the first step in any discussion of an argumentative nature. It is impossible to get an accurate knowledge from the literature of the percentages of fractures of the neck of the femur at a given angle or in a given location. I have classified them only in a general way as fractures of the neck of the femur and have subdivided them into fractures occurring near the head, in the middle of the neck and at the base of the neck, which are frequently complicated by fracture involving the trochanter. This is not adequate classification to serve as a guide in the treatment that is applicable to the given type of fracture. Analysis of the situation shows that the neck of the femur is composed of cancellous bone not more than 2 inches long, which bears the weight of the body at a distinct angle to its long axis. Cancellous bone is noted for its ability to disintegrate when exposed to trauma. A particular example of this, with which every one is familiar, is Colles' fracture at the lower end of the radius in elderly persons. In this fracture, which is always produced by indirect violence, the blow is struck more or less in the long axis of the bone, with the force directed slightly toward the extensor surface, and when reduction is attempted it is found that, no matter how perfect the end-to-end apposition may be, the radius is never the same length as it was before the injury, the reason being that the cancellous cells are actually crushed and there is disintegration of a certain amount of bone, so that reestablishment of normal length cannot be regained. In elderly persons these cancellous bone cells are brittle and are easily crushed, with consequent permanent shortening. The amount of shortening depends on the amount of force exerted at the time of the fracture, and the brittleness of the bone.

It is true, however, that the neck of the femur differs somewhat in its cell structure from the lower end of the radius. In the young person the weight bearing lines in the neck of the femur are distinctly reinforced from the upper part of the head, obliquely downward and outward across the neck and into the shaft, almost connecting the upper part of the head with the medial cortical bone in the upper end of the shaft. It will be noticed that in the elderly person who takes comparatively little exercise these lines are frequently almost completely absent. Therefore there is much more similarity between the neck of the femur and other cancellous bone in elderly persons than there is in younger individuals. These lines of increased density in the neck of the femur correspond to a direct weight bearing line between the shaft and the upper part of the head and acetabulum, and it is at this point that the body rests on the head of the femur. The

remainder of the head of the femur acts as a bearing surface to give stability but does not sustain any considerable amount of weight.

It should never be forgotten, in the reduction of fractures, that the fragment which can be controlled should be brought into normal alignment and rotation with the fragment which cannot be controlled. In these fractures the proximal fragment is entirely out of con-



Fig 1—Injected specimen showing on roentgen examination arteries of the visceral capsule. Note 45 degree dip of artery near position of former epiphyseal line. (Courtesy of Dr W Eugene Wolcott.)

trol, so far out of control that even though the fragment is exposed it is many times difficult to bring this short fragment, which revolves and moves in every direction at the slightest touch into perfect apposition with the lower fragment. Furthermore, the intra capsular fragment is not maintained by any ligamentous or muscular attachments. There is no blood clot, because the blood that comes from the fractured ends of the bone is mixed with synovial fluid and is liquid within the capsule. The capsule of the joint is distended and consequently is shortened, because the distention from within causes the capsule to bulge and takes up all its slack. The blood supply to the neck is often poor.

Wolcott¹ of Des Moines has demonstrated that the circulation to the neck of the femur is supplied through the visceral capsule and the small arteries which enter the head through the ligamentum teres and that these blood vessels communicate (fig 1). In a large number of prepared specimens it has been shown that mercury injected through the arteries in the visceral capsule will flow out through the ligamentum teres and vice versa. The arteries that enter the neck directly from the visceral capsule enter at the posterior superior quadrant and posterior inferior quadrant; no blood supply enters the anterior surface. Wolcott has also shown that there

is a distinct dip of from 30 to 45 degrees downward of the blood vessels entering the superior surface of the neck at practically its junction with the head in a line with the epiphysis, and that these are the blood vessels which carry over from the neck into the head. Taking into consideration these anatomic facts it would seem that the direction of the line of fracture and the amount of force exerted in its production which might tear the visceral capsule and interfere with this important blood supply would have a distinct bearing on the prognosis. In other words, a fracture which extended obliquely from the proximal third of the neck, from above downward and forward, would tear off more of the blood supply from the proximal fragment than would a fracture the line of which ran from in front near the head, backward and upward. In the first type of fracture the entire proximal fragment would have to depend for its circulation on the very meager nutrition derived from the supply of the central arteries of the head, whereas in the second type of fracture if the visceral capsule were not torn off, the proximal fragment would have ample blood supply and the distal fragment would have considerable blood supply coming up from the trochanter. It would therefore seem important to determine the exact angle of fracture by the recording of roentgenograms at a number of angles and keeping accurate records of which of these lines of fracture produced the greatest percentage of nonunions.

The capsule of the hip joint (fig 2) and the muscular attachments are so made as to allow easy flexion but in extension these ligaments and muscles are pulled tight, especially the Y ligament in the capsule and the tensor femoris median, all attachments of the quadriceps and adductor group are put on the stretch and drag the upper end of the lower fragment toward the acetabulum as hyperextension is approached. Thus, if the fragments are not in immediate contact as hyperextension is approached, this maneuver would further displace them.

METHODS OF REDUCTION

Because of this constriction and shortening of the capsule by swelling, the Leadbetter method of reducing fractures of the neck of the femur was designed. It

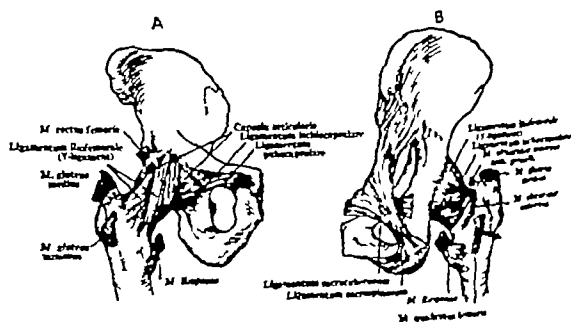


Fig 2—Ligaments and tendons about the hip. A, anterior view; B, posterior view. From Callander, *Surgical Anatomy*, Philadelphia, J. B. Saunders Company, 1933, page 916.

is interesting to note the general agreement among sixteen experienced surgeons who were asked regarding the procedures they used in closed reduction. All of whom favored traction at right angle flexion. This relaxes the capsule and gives the greatest leverage for bringing the fragments opposite each other. Laterolateral as well as longitudinal traction would seem to offer the chance of bringing the fragments exactly opposite each other.

¹ Wolcott, W. E. Personal communication to the author.

each other, especially when combined with adduction followed by Leadbetter's² circumduction and internal rotation and extension. Since the proximal fragment is completely uncontrollable, ability to bring the fractured surfaces into complete contact and hold them there depends somewhat on the angle of the fracture and its distance from the head. It is a matter of common knowledge that extracapsular fractures for the

most part heal without difficulty. This had been attributed to adequate circulation, but I believe that one of the important factors in the healing of the fracture is that the proximal fragment is not entirely out of control, owing to the attachment of the capsular ligament around it.

Dickson and Diveley³ state in a personal communication, that in intracapsular fracture they do not advocate open operation or nailing in fresh fractures, because their results have been satisfactory with the Whitman abduction method with Leadbetter modification except in patients of obese type in whom there are definite difficulties in main-

tening firm fixation by plaster. They report by this method 70 per cent bony union and 14.7 per cent non-union with a mortality of 15.3 per cent, in their general hospital cases whereas in their private cases they had 80 per cent union and 5 per cent mortality. These statistics are much better than those reported from other general hospitals and must be attributed to personal skill and attention to detail by a well controlled service. The average of union for the Whitman method is more nearly from 40 to 50 per cent as indicated by the statistics of other workers.

Tremendous efforts and many methods have been advanced to improve the poor results. Speed⁴ has very aptly called this the unsolved fracture, and I believe it is still unsolved and will always remain so as are other fractures if 100 per cent functional or anatomic results are expected. There are many obstacles to be overcome aside from those mentioned. Heretofore there has been little or no discussion of the angles at which these fractures occur and to what extent external or internal rotation may affect the proximal in its relation to the distal fragment.

At best each fragment of the neck is short. Anteroposterior roentgenograms are inadequate so far as they

concern judging the approximation of the ends of the fragments and in my opinion a great many of the lateral roentgenograms also are inadequate and inaccurate. Because of the poor shadow that is cast by the cancellous bone of the neck, many irregularities cannot be evaluated by either of these views, nor can the angle of the fracture line be judged accurately. Because of the shortness of the fragments a considerable amount of angulation can occur without being noticed, unless the axis of the fragments is projected by a long line drawn through the middle of each. Rotation of the proximal fragment cannot be detected by x-ray examination. What appears to be the middle of each fragment is frequently not the middle, because of rotation that may occur (figs 3 and 4).

From the sixteen inquiries made, the answers showed general agreement on one point that accurate reposition of the fragments was necessary to promote union. How may the rotation of the distal fragment affect the proximal fragment at various angles, producing what may seem to be a reduction which would be accurate enough in the shaft of a long bone, but which actually produces bony contact between only a small portion of the fractured surfaces of the neck, leaving the rest of the fractured surfaces exposed to a bath of bloody synovial fluid?

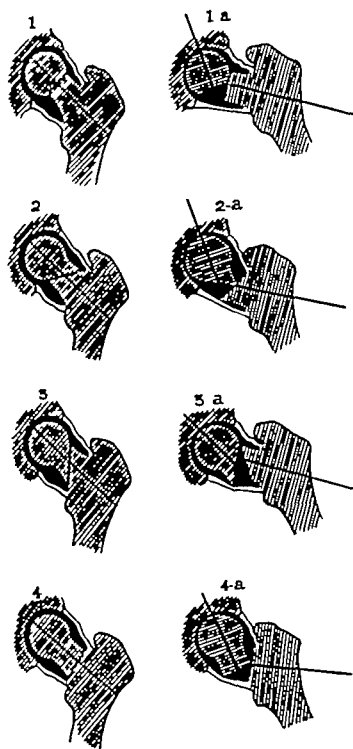


Fig 3—Anteroposterior aspect of various fracture lines diagrammatically shown and the effects of adduction

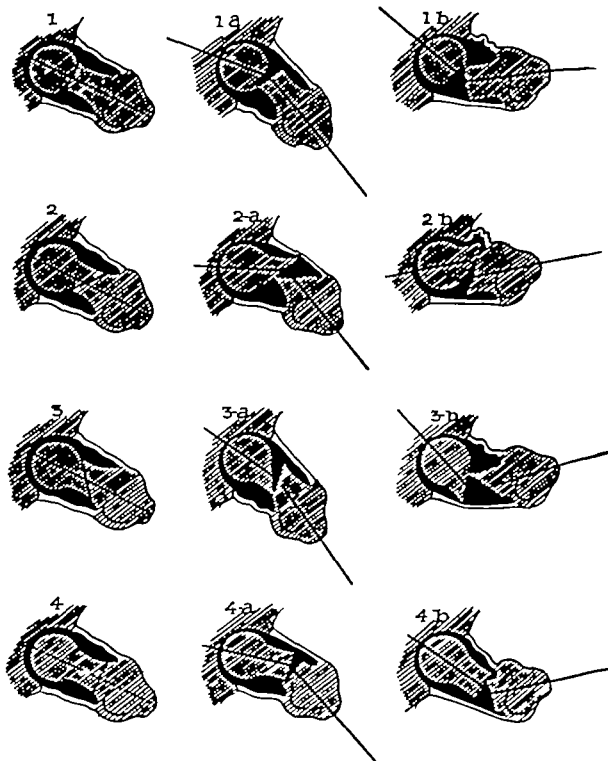


Fig 4—Lateral aspect of various fracture lines diagrammatically shown and the effects of internal and external rotation

The capsule of the hip joint is the only structure surrounding the proximal fragment and it is only the posterior part that can be used as a guide for the position of this fragment. If this part of the capsule is put on the stretch by internal rotation it will act as a bed or soft splint along the posterior surface of the neck. In a transverse fracture if the fragments are end to end it will force them into contact, and

² Leadbetter C W J Bone & Joint Surgery 15 931 (Oct) 1933
³ Dickson F D and Diveley R L Personal communication to the author
⁴ Speed Kellogg Surg Gynec & Obst 60 341 (Feb) 1935

hyperextension of the femur will further increase this contact by tightening the Y ligament. If, however, the capsule is so distended that these fragments cannot be brought end to end and with the edges in apposition, internal rotation and extension will tend to angulate them, and this angulation depends for its direction on the angle of the fracture. If the fracture line runs

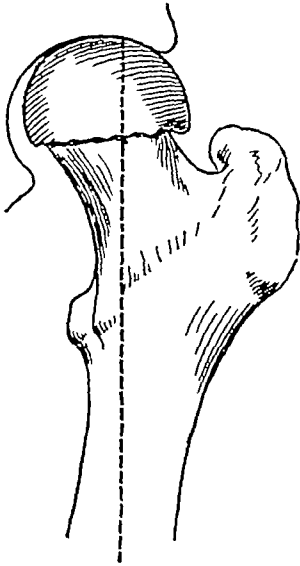


Fig 5—Valgus position of head with varus position of neck and shaft. Impaction with resultant good weight bearing line.

from the upper edge of the head downward and outward (3 and 3 a, fig 3), emerging on the inferior surface of the neck following more or less the weight bearing line through the neck, the fragments may possibly be brought into reasonable apposition by manipulation of the Whitman-Leadbetter type, but in internal rotation and hyperextension the upper end of the lower fragment will move backward and the tightening of the Y ligament, plus the tightening of the posterior capsule, will push the fragments past each other as it would in any oblique fracture. If the fracture line is at an angle where the rays of an anteroposterior or lateral roentgenogram will not pass through, as I believe is

frequently the case, this displacement could not be discerned in the roentgenogram. If the fracture line runs from the inferior proximal portion of the neck outward and upward, creating the opposite angulation, the same thing could occur (2 and 2 a, fig 3). But the tightening of the Y ligament in extension would push the outer end of the upper fragment upward, because the upper end of the lower fragment would impinge against the fractured surface of the proximal fragment, and through that fragment into a varus position. If the fracture occurs at nearly an opposite plane of angulation, that is, running from the front of the head and neck backward and outward, internal rotation of the leg would push the upper end of the lower fragment against the fractured surface of the upper fragment, throwing that into a backward displacement. In this case the lower end of the upper fragment would push into the posterior capsule, leaving a gap between the fragments near the shaft with contact of the fragments near the head. If the angulation of the fracture should be from behind outward and forward, internal rotation would do the opposite thing (3 and 3 a, fig 4), in other words, there would be contact between the lower end of the upper fragment near the shaft and a tendency for the upper end of the lower fragment to pull away from the upper fragment posteriorly. If the fracture should be in the middle of the neck, unless the fragments were brought absolutely end to end before internal rotation took place, the tendency would be for the occurrence of posterior angulation (1, 1 a, 1 b, fig 4) that is the apex of the angle toward the posterior capsule so that the anterior parts of the fractured surfaces would be in contact and there would be a small wedge-shaped gap between the posterior fractured surfaces.

There is one type of intracapsular fracture of the neck of the femur that I have never seen fail to heal. This type occurs in some mysterious way by which the fracture line occurs near the head and shifts into a varus position, so that there is a direct weight bearing line between the shaft and the upper part of the acetabulum, with a certain amount of impaction existing between the two fragments (fig 5). Patients with this fracture are able to bear weight immediately and walk with comfort, and they need no immobilization or support after the acute soreness of trauma has disappeared. This type of fracture is not common, but it is nevertheless a complete fracture of the neck of the femur at a point where the distal fragment of the neck is long. One would suspect that, if nonunion is due to poverty of circulation in the middle of the neck in these cases there would be rapid atrophy of the neck. Experience has not shown that this occurs. That weight bearing can be allowed early in this type of fracture is well known, and so far as I have been able to learn by personal inquiry no one has ever seen an atrophy of the neck occur.

CHOICE OF A METHOD

These things being true, there are certain essentials which one should be sure of in choosing the method of treatment for a particular fracture.

First, that anatomic reposition of the fragments can be accomplished.

Second, that the method used will maintain the fracture in this position for sufficient time to allow complete union.

Third, that the patient's physical condition, physical characteristics and economic circumstances will allow continuation of the treatment to a favorable conclusion with the least possible disability to joints, muscles and ligaments.



Fig 6—Before reduction.

The prognosis will be made on the characteristics of vascularity in the bone as indicated by x-ray examination and by the patient's previous physical condition; secondly, by the angle of fracture as determined by views at several angles and possible effect on interference with circulation from the capsule and the blood supply; thirdly, by the ability to place the fragments in anatomical reposition and maintain them there until union can take place.

The well leg traction splint as advocated by Anderson⁵ and Jones⁶ has come into considerable popularity in recent years, and certain it is that apparently good reduction can be obtained by proper application of this method. However, it maintains constant traction on the injured leg, and results, so far as I can ascertain from personal inquiry, have not been all that were expected. It is almost impossible to get lateral views at various angles after the apparatus is applied, and therefore one cannot be sure that the fragments are in perfect position. It will certainly hold the fragments in position so far as extension will hold them in position, and enough abduction can be secured to maintain that position, but I question whether some of the failures in union are not due to the fact that it actually holds the fragments somewhat separated and the ends of the fragments are bathed in synovial fluid instead of being held close together. One cannot say at this time, based on any authoritative information, what percentage of bony union occurs under this form of treatment. It has one tremendous advantage over the Whitman method, i. e., that the patient can move around quite freely and the nursing care is greatly simplified, and also that there is practically no risk involved in the treatment.

A number of methods have been advanced for internal fixation of fracture of the neck of the femur. There are advocates of blind nailing and there are advocates of nailing after the joint is opened, with visual reduction of the fracture in perfect anatomic position. I have no doubt that there are men who have had experience and have enough skill to do blind nailing and attain a large percentage of good apposition and good fixation and consequently a large percentage of good functional results, but there is no large volume of statistics available to support this opinion.

The Smith-Petersen three-flange nail is probably more widely used at present than any other method of internal fixation. In 1925 Smith-Petersen⁷ introduced this method, and in a personal communication he says that, of his first twenty-five cases, 75 per cent resulted in bony union, of the next twenty-five, a little more than 70 per cent had bony union with no fatalities from operation and no complications. At first he opened the hip to obtain proof of perfect reduction. Johansson⁸ modified this nail, Wescott⁹ modified the Smith-Petersen technic by using protractors to direct the nail. Wescott⁹ advocates in addition, the necessity of checking by roentgenograms at various angles to determine the alignment and apposition of the fragments, and I believe that this detail is of tremendous importance, but I question whether the rather complicated technic for making these roentgenograms and the measurements that are advised would be available in most institutions. Here again attention must be called to the fact that what works perfectly in the hands of a skilled observer with unusual mechanical ability will not work as a general rule.

Thornton¹⁰ also simplified the Smith-Petersen technic discarding entirely the use of a fracture table. He has reported to Smith-Petersen fifty cases with no failures, but he adds that some of them are too recent to be judged and that he believes there will be some failures,

since no one can hope to have 100 per cent good results in any large series of cases. These men at this time report over 80 per cent of union by the use of the Smith-Petersen nail.

Scuderi and Callahan, with Cubbins,¹¹ have devised a visual reduction method and use a V-shaped stainless steel channel inserted at a definite angle determined by a pin placed against the upper rim of the acetabulum. This method has not yet appeared in print, but I have seen a number of the cases so treated and from personal communication with the authors it appears to me to be a definite step toward an accurate method of reduction and retention.

The bone graft advanced by Albee¹² and others as a means of fixation has not been largely used in fresh fractures. It is probably a means of mechanical support which is nonirritating to the bone, but it is very irritating to perform because of the necessity of securing the fixation apparatus from the patient's own anatomy. Moore¹³ has devised a method of using three stainless steel pins which are much heavier than



Fig 7—Anteroposterior view showing pins in position

Kirschner wires, placed in such a way that they give support from three different directions. One runs from the upper end of the shaft upward, inward and a little backward, the second from a little above this point approaching the posterior surface of the shaft upward, inward and forward, the third, above the others, engaging through the lower part of the neck into the lower part of the head. These pins are driven in until they engage the head in its densest portion beneath the cartilage. The distal ends of the pins are threaded and round nuts are applied, which are screwed in tight against the bone. When they are in place they are given a good solid blow with a hammer, which tends to impact the fractured surfaces, and the distal ends are fastened together with fine wires wound about them to give additional tension (figs 6, 7 and 8). Moore does this under the closed method with local anesthesia, and the results I have seen have been brilliant. He applies no fixation whatever in the way of a splint and allows the patient to be up in a wheel chair the day following operation. He emphasizes the necessity of one pin at least progressing along the weight bearing line of the neck and shaft up into the head and points out that where direct weight bearing lines can

5 Anderson Roger *Physiotherapy Rev* 14 12 14 (Jan Feb) 1934
6 Jones Laurence *Ann Surg* 97 237 246 (Feb) 1933

7 Smith Petersen M S Personal communication to the author

8 Johansson Sven *Zentralbl f Chir* 59 2019 (Aug 20) 1932

9 Wescott H H *Virginia M Monthly* 59 197 (July) 1932 62

46 (Nov) 1935

10 Thornton Lawton quoted by Smith Petersen⁷

11 Scuderi C S Callahan J J and Cubbins W R. Personal communication to the author

12 Albee, Fred *Ann. Surg* 42 11 (July) 1915

13 Moore A T *Internat S Digest* 10 323 (June) 1935

be reestablished the healing is more rapid and complete. All these methods eliminate the long immobilization of Whitman and the consequent disability in the joints and the muscular weakness that follows.

Bozsán¹⁴ has advocated drilling without any fixation apparatus and believes that union is promoted by this means, the patient being fixed in Whitman's abduction spica after this procedure. He believes that internal fixation damages the living structure of the neck and head to the point of necrosis.

All the men who use internal fixation of whom I made inquiry have concluded that long immobilization is unnecessary and are impressed with the fact that the disability in the hip, knee and ankle that occurs with the Whitman method is overcome by the use of internal fixation. This, of course, is a great advantage, since the average age of the patient suffering from fracture of the neck of the femur tends to increase the disability in the joints caused by stiffness produced by prolonged immobilization. It is interesting to note that in every



Fig. 8—Lateral view showing pins in position.

case the men doing pioneer work in this field have stated that they believe anatomic reposition necessary and that where good results have not been obtained they have felt many times it was due to the fact that there was not anatomic reposition and firm retention. Even those who advocate the closed method as a routine procedure call attention to the fact that with patients in whom firm immobilization cannot be obtained because of adiposity or for other reasons they resort to internal fixation.

I¹⁵ have advocated during the past few years the open reduction of fresh fractures of the neck of the femur along the line of the operation which Brackett advised in ununited fractures of the femur assuming that there are no contraindications due to physical disability. In this operation the head is hollowed out in the form of a parabola, the trochanter is cut off obliquely from above downward and outward the end of the neck is fitted into the hollowed out head and the trochanter is reattached below its former location. The results in all cases in which this was done have been excellent. There

is of course always three-fourths inch shortening but in every case a perfect functioning hip has been obtained. In no case has there been atrophy of the neck or of the head. The patients are allowed to bear full weight at the end of eight weeks and most of them have walked without crutches and with perfect comfort in ten weeks or less. This method of course involves a major surgical procedure which however does not seem to be shocking. There have been no complications or deaths in fresh fractures. In forty cases of ununited fracture, many of the heads that showed necrosis before the operation were revascularized and are functioning normally, which would indicate that work and close contact of the fragment promotes union. This modification of the Brackett operation has been extremely successful and satisfactory and in selected cases I believe gives the most perfect results in the shortest time of any procedure with which I am familiar. It reestablishes the weight bearing line from the shaft of the femur directly up into the head, brings the shaft and head into close bony contact, allows normal weight bearing, and does not necessitate immobilization of the joints of the hip, knee or ankle.

CONCLUSIONS

While the number of cases is not great enough at this time to make any definite comparison possible certainly there is evidence enough to give one the strong impression that

1 X-ray evidence of reduction in fracture of the neck of the femur can often be very misleading if the roentgenogram is taken only at two angles, therefore roentgenograms at a number of angles should constitute a routine both before and after reduction.

2 If there is any considerable obliquity of the fracture line, visual reduction is preferable with fixation applied while the fracture is in view.

3 There should be a classification of fracture of the surgical neck as to the line and plane of the fracture. In addition to this, a classification of the fracture as to the amount of displacement occurring immediately after the injury in order to determine whether certain lines and planes of fracture interfere with the circulation more than certain other lines and planes of fracture. The amount of displacement would indicate the amount of tearing of the visceral capsule that might be present, thereby indicating whether this factor should be taken into consideration in making a prognosis.

4 The patient's physical condition, age and weight should be considered before any method of treatment is decided on, and, whatever method is used, anatomic reduction should obtain and the method applied that will maintain the fracture in this position while healing.

5 Of the closed methods, Whitman, Leadbetter, Whitman, and well leg traction certainly have their place in the field of treatment of fracture of the neck of the femur, but from present information mechanical fixation with three-flange nails, steel pins or bone grafts offer greater comfort to the patient, greater chance of bony union, easier nursing and less disability following union so far as the joints of the leg are concerned than any of the closed methods.

6 Regardless of what method is used for maintaining position, close bony contact, anatomic apposition and absolute fixation I believe are the three prime factors in securing better results in fractures of the neck of the femur.

700 North Michigan Avenue

¹⁴ Bozsán, E. I. *J. Bone & Joint Surg.* 16: 73-87 (Jan.) 1934.

¹⁵ Magnuson, J. B. *Repair of Ununited Fracture of the Neck of the Femur*. *J. A. M. A.* 98: 1791 (May 21) 1932.

ABSTRACT OF DISCUSSION

DR. FRANK D. DICKSON, Kansas City, Mo. What Dr. Magnuson was getting at was that the primary aim in the treatment of fracture of the neck of the femur is a reduction, and whether one uses a cast to hold this reduction or prefers to use some form of nailing or internal fixation device is largely a matter of choice. Which is the better has by no means as yet been determined. The important point is the reduction of the fracture. I was interested in what Dr. Magnuson had to say about too much abduction. I believe that the greatest fault in reduction of fractures of the neck of the femur is too much abduction. Internal rotation is the important maneuver with a moderate amount of abduction. It is true that in transverse fractures of the neck of the femur one must be very careful about the degree of internal rotation. In oblique fractures one can use more. The statistics on fractures of the neck of the femur are in an unsettled state. The figures that are given for fractures of the neck of the femur by the Whitman-Leadbetter method apply to all the cases as they come into the hospital. Most figures on nailing operations apply only to selected cases. There is no group of statistics comparable so far as the closed method of treatment or the internal fixation method of treatment is concerned.

DR. WILLIS C. CAMPBELL, Memphis, Tenn. I have been a strong exponent of the Whitman treatment for many years but I have become convinced, from my observation of the shorter period in which union is secured in some cases at least and of the results that have been obtained in decreasing the time of treatment, that some method of internal fixation is the method of choice at the present time. I do not believe that it makes very much difference whether one uses a nail or two or three pins. The aggregate amount of steel in the wound is approximately the same, it is just a question of choice. The mechanical principles are identical. The statement has been frequently made that the reason for nonunion is the failure to reduce but since it has been possible to prove reductions by two view roentgenograms, it has been found that reduction is accomplished in practically all cases. Dr. Magnuson has stated that exact position of the head cannot be determined by the side view roentgenograms. I cannot agree with him and believe that by two views reduction can be accurately determined. I have employed open operation with open nailing and blind nailing using the Johansson method but with the nails on the market today there is danger of the wire bending; it may even be broken off in the head as a foreign body. In one of my cases there was a curling up of the wire possibly from rotation of the head but fortunately it was possible to extract it. I have heard of one or two cases in which the wire was broken off. Rarely are extractors required for removal of the nail. As a rule there is so much bone atrophy around the nail that if the patient is turned on the side and shaken rather hard the nail will drop out. What effect this atrophic condition may have in the future I do not know but I have seen no ill effects so far. Years ago I made an analysis of twenty-five cases in which I used the impaction of Cotton (which has been previously described) and twenty-five cases in which I used the Whitman reduction without impaction. The results were identical. No harm was done by impaction but no good was accomplished. As to the question of arriving at some method of treatment for fracture of the neck of the femur which can be carried out by the general practitioner as suggested by Dr. Kellogg Speed, there will never be such a method until there is a change in the laws of physiology and nature. The last word has not been said and I think it will not be said for some time if ever.

DR. FRED C. FERCIOT, Lincoln, Neb. A woman aged 69 had a fracture of the neck of the right femur in 1932 which was treated by the Whitman abduction method with results of bony union. Last year she suffered a fracture of the neck of the left femur which was treated by fixation with a flange nail. At the end of nine months the patient walked with a fair gait and she is able to demonstrate a good degree of abduction. A woman aged 82, suffered a fracture of the neck of the left femur and began light weight bearing in less than two months and has been up and about for thirteen months with excellent functional stability and range of motion. I have felt that this method of treatment effects what may be termed

a fixed impaction of the femoral neck on the head thus favoring revascularization of the head and early union. In suitable cases I have found it highly satisfactory.

DR. J. ALBERT KEY, St. Louis. From what Dr. Magnuson said about comparing the neck of the femur with the lower end of the radius one can assume that he considers the neck of the femur cancellous bone. I think he is wrong. The neck of the femur is compact bone, with a very dense cortex on either side, and especially at the lower border. I don't think the angle of the fracture makes any difference, and I don't think anatomic reduction is to be aimed at or important. In fractures of a long bone one is not particularly concerned about anatomic reduction. In fact, it has been my feeling that I got union quicker and better and stronger if the ends of the fragments were a little off center but in good alignment. I feel that impaction is important if it can be held. I have used impaction by Cotton's method and got nonunion with Whitman plasters and this was because I couldn't fix the hip. I can apply a Whitman plaster just as tight as the patient can stand it, but in a couple of weeks I can run my fist down between the anterior superior spine and the plaster. The patients move around in the plaster, and they move around in double spicas. I think that I have put on my last Whitman plaster for a fresh fracture of the neck of the femur. The two-pin method is not the answer. If a man is capable of doing it the Smith-Petersen nail is the best treatment yet devised but it cannot be done consistently by the ordinary man. A man who isn't a good enough surgeon to put in a Smith-Petersen nail can put in two pins. I cannot put in a Smith-Petersen nail by blind nailing, but I run a drill in first to get my direction and then take a roentgenogram. I pull out the drill, a three-sixteenths-inch drill, not a wire, use that as a guide to drive my nail, either in the same hole or directed upward or downward or backward or forward, as is indicated, and also as a measure for the length of the nail. That is the way I think more union will be obtained than by any other. But if one cannot do that the next best thing to do is to get the fracture not necessarily anatomic reduced but the head on top of the neck and drive this cortex of the neck into the head and hold it there.

DR. LAURENCE JONES, Kansas City, Mo. This paper has dealt with internal fixation as an approved method for the treatment of intracapsular fractures of the neck of the femur. Sufficient attention has not been devoted to the choice of metals used for producing this. Most of the appliances now in use are made of a plain chrome rustless steel. This is due to the influence of the instrument maker, who prefers it to other varieties, as it is easily machined. Investigation has shown that many steel alloys cause bone necrosis. A sample in vitro test is first to place any metal in Ringer's solution that is about to be used for fixation. For example, Vanadium steel of the standard Lane plate will corrode rapidly and at the end of thirty-six hours will leave a definite deposit at the bottom of the test tube. Similarly the plain chrome rustless steel will corrode not quite as rapidly but very definitely, and when placed in the bone of a dog will lose weight at a rate ranging up to 10 per cent in the first thirty days. For internal fixation the chrome-nickel alloys are the metals of choice. The optimum composition seems to range from 8 to 18 per cent either of chromium or of nickel. Bony trabeculae in contact with these alloys will remain intact, whereas those exposed to plain chrome rustless steel will show definite absorption. Therefore one must be careful not to use a metal that will delay if not completely inhibit bony union.

DR. PAUL B. MAGNUSON, Chicago. It seems to me that more discretion should be given to choosing the method for the patient not of promoting anybody's method because after all, the operator is trying to get a result. I think attention has not been paid to whether the fracture is oblique or transverse. A transverse fracture brought end to end can be impacted and held beautifully. The nearer the head the fracture is, and the more one can set the head up on top of the neck, the better it will hold, because a weight-bearing line is transmitted directly up into the head. I have been advocating that in the use of the modified Brackett operation in fresh fractures because the transmission of the weight is directly up into the head but that cannot be done in all of them because the method is not suited to all of them.

THE INCIDENCE OF TRICHINOSIS IN SAN FRANCISCO

JAMES B. McNAUGHT, M.D.
AND
EUGENE V. ANDERSON, M.D.
SAN FRANCISCO

The incidence of trichinosis has been studied in only a few localities in the United States. The material examined was muscle obtained either at autopsy or from the dissecting room. The percentages of positive cases have varied from 3.5 in New Orleans¹ to 27.6 in Boston². Since there are no data on the incidence of human infestation with this parasite on the West Coast, we have undertaken a study of material available in San Francisco.

In table 1 we have compiled the published reports on the incidence of human trichinosis in the United States listing the localities, the methods used, the number of cases examined and the percentage of positive results obtained at autopsy. Our statistics are added to the bottom of the table for comparison.

Man is an accidental host to *Trichinella spiralis* when he ingests infected meat. Pork is the usual offender, but bear meat has also been reported as a source of infection.³ Gastric juice digests the muscle and wall from about the encysted larvae, which pass into the intestine, where they mature, copulate, and bear their young. The embryos reach the voluntary muscles through the lymphatics and blood stream, encyst, and live there for many years. By finding them in bits of excised muscle,

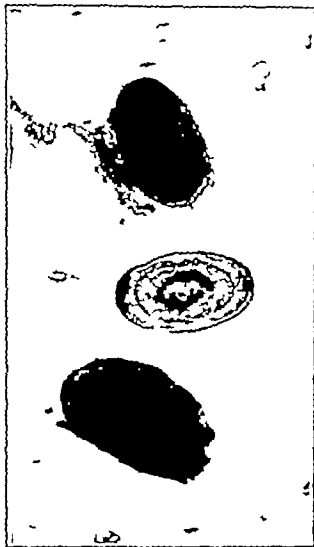


Fig. 1.—Encysted larvae of *Trichinella spiralis* digested free from muscle (X 65).

one can verify the clinical diagnosis of trichinosis during life. Examination of biopsy material is not a practical method for establishing the incidence of infestation in a community.

The most satisfactory method of studying biopsy or autopsy material for *Trichinella spiralis* is by simulating nature's process of digesting the muscle with liberation of the larvae for identification. Other methods have been used by various investigators. Bits of muscle have been pressed thin between glass slides and examined microscopically for encysted parasites. This is simple and rapid and yields highly satisfactory results when the muscle is heavily infested. Stained sections are essential for observing histologic changes in trichinosis tissues but unless the parasites are present in large

numbers they will be missed if only a few slides are studied. Serial sections are not practical for survey work. The diaphragm has been found to be the most satisfactory muscle for studying the postmortem incidence of infestation with *Trichinella spiralis*.

METHODS

Diaphragms removed at autopsy were finely ground in a meat chopper. Fifty grams of the minced muscle from each case was mixed with 500 cc. of artificial "gastric juice" in a beaker and stirred in an incubator at 37 C. until digested. The juice was a freshly prepared aqueous solution of 0.7 per cent hydrochloric acid and 1 per cent granular pepsin. Our digesting device is described in detail elsewhere.⁴ The contents of multiple beakers were simultaneously stirred by wooden "tongue blades" kept in motion by the reciprocating action of a windshield wiper. This prevented metal from coming in contact with the acid solution and the wooden blades were discarded after use. All instruments and containers were scrupulously cleaned after each procedure, to prevent contamination.

The meat was digested in from four to five hours but often the mixture stood in the incubator over night with no observable deleterious effects. The mixture was then poured, according to McCoy's⁵ procedure through a 20 mesh brass wire sieve into a large glass funnel, which was closed by a rubber tube and pinchcock. The larvae settled rapidly to the bottom and we removed them by opening the pinchcock and drawing off a few cubic centimeters of fluid into a petri dish for microscopic examination. If the sediment contained so much debris that the larvae were not readily seen, they were rapidly washed free in water and the resulting sediment was again examined. Actual counts were made of the number of larvae in each positive case.

When the material was available, 50 Gm. of heart muscle from the cases presenting trichinosis diaphragms were digested and examined for larvae.

OBSERVATIONS AND COMMENTS

The diaphragms from 225 consecutive autopsies in five hospitals in San Francisco were examined according to the methods outlined. Twenty-five were from new-born infants and were all negative for *Trichinella spiralis* and are not included in our statistical study of 200 cases. This is in accord with Augustine's⁶ experimental and clinical observations that prenatal trichinosis does not occur.

Twenty-three trichinosis diaphragms were found in the first hundred cases and twenty-five in the second hundred, giving an average of 24 per cent for the series. Owing to the similarity of figures in each hundred cases, we did not continue the survey. Our percentage of positive results is in fair agreement with the few recent reports in other localities, except for the 3.5 per cent for New Orleans (table 1). Human¹ examined approximately 10 Gm. of muscle from each case. He undoubtedly would have found a higher percentage had he used the 50 Gm. quantities digested by Queen² and us.

In the course of digestion the muscle and fibrous tissues were removed leaving oval encysted larvae.

Supported in part by the Rockefeller Fluid Research Fund of the School of Medicine of Stanford University.

From the Department of Pathology, Stanford University School of Medicine and the Department of Public Health at San Francisco.

¹ Human, E. H. *Trichinosis in Louisiana*. New Orleans M. & S. J. 88:445-448 (Jan.) 1930.

² Queen, F. B. *The Prevalence of Human Infection with Trichinella Spiralis*. J. Parasitol. 18: 128 (Dec.) 1931.

³ Walker, A. T. *Trichinosis. Report of an Outbreak Caused by Eating Trichinosis Bear Meat in the Form of Jerky*. J. A. M. A. 98: 201 (June 11) 1932.

⁴ Newman, H. W., DeLamater, A. B. and McNaught, J. I. A. *Simple Digesting Device*. J. Lab. & Clin. Med. to be published.

⁵ McCoy, O. P. *Immunity of Rats to Reinfection with Trichinella Spiralis*. Am. J. Hyg. 14: 484 (Sept.) 1931.

⁶ Augustine, D. L. *Studies on the Subject of Prenatal Trichinosis*. Am. J. Hyg. 10: 115 (Jan.) 1934.

shown in figure 1. As digestion continued the closely coiled larvae were liberated from their capsules, as seen in figures 2 and 3. They moved fairly slowly, coiling and uncoiling. Living larvae were found in all the positive cases.

The number of larvae found in the 50 Gm of trichinous diaphragms was usually small, being less than 20 in 79 per cent of the cases, between 20 and 100 in 12.5 per cent and more than 100 in 8.5 per cent. The largest number was 3,800.

None of the clinical records of our positive cases revealed a definite history of trichinosis. One man, aged 76, had complained of abdominal discomfort, nausea and occasional attacks of diarrhea following the ingestion of meat, but pork was not specifically mentioned. The eosinophil count was 1 per cent. Twenty-nine living larvae were found in this specimen. In many of the case histories "rheumatic" or "muscular" or

"joint" pains, "gastro-intestinal upsets" and the like were recorded, but these were as plentiful in the negative as in the positive cases. However, considering the high incidence of positive results that were obtained, it is probable that some of the vague muscle aches and abdominal upsets which pass undiagnosed are actually light infestations of *Trichinella*.

TABLE 1—The Incidence of Trichinosis at Autopsy in Various Localities of the United States

Year	Locality	Methods	Number of Cases	Per Cent Positive
1897	Buffalo (Thornbury University Medical Magazine Buffalo 1897)	Microscopic sections	21	14.3
1901	Buffalo (Williams H U The Frequency of Trichinosis in the United States J M Research 6: 64-83 1901)	Pressed muscle	500	5.3
1931	Rochester N Y *	Digestion	344	17.5
1931	Boston *	Digestion	58	27.6
1934	Minneapolis (Riley W A and Schellley C H Trichinosis of Man a Common Infection J A M A. 102: 1917 [April 14] 1934)	Pressed muscle	117	17.1
1936	New Orleans *	Digestion	200	8.5
1936	San Francisco	Digestion	200	24.0

The ages of the 200 patients ranged from 2 to 87 years. Table 2 shows the distribution in broad age groups. The ages of subjects yielding positive results varied from 25 to 84 years.

Although the series is not large, it is interesting to note that, in a comparison made between the number of cases in which examinations were made and the number of *Trichinella* infested diaphragms that were

found in each age group, there is an increasing incidence of positive cases. Up to 25 years of age no subject yielding positive results was found, from 25 to 40 years of age 14.8 per cent gave positive results, from 40 to 75 years 26.6 per cent, and above 75 years 29.1 per cent. This would bear out the logical assumption that the older an individual the greater the opportunity for trichinous infestation.

Seventy per cent of the 200 diaphragms examined were from males and 30 per cent from females. There was no variation in incidence of trichinosis according to sex.

TABLE 2—The Incidence of Trichinosis by Age Groups in 200 Autopsies in San Francisco

Age Groups in Years	Cases Examined		Positive Cases		
	Number	Per Cent	Number	Per Cent of Total Positives	Per Cent of Total Cases
2-25	10	5.0	0	0.0	0.0
25-40	27	13.5	4	8.4	14.8
40-75	139	69.5	37	77.1	26.6
75-87	24	12.0	7	14.6	29.1
Totals	200	100.0	48	100.0	24.0

Differential leukocyte studies on stained blood smears were available in 58 per cent of the positive cases, with 4 per cent as the highest eosinophil count. No eosinophils were seen in the differential count recorded for the case yielding 3,800 larvae. Although the eosinophil count is the simplest and probably the most

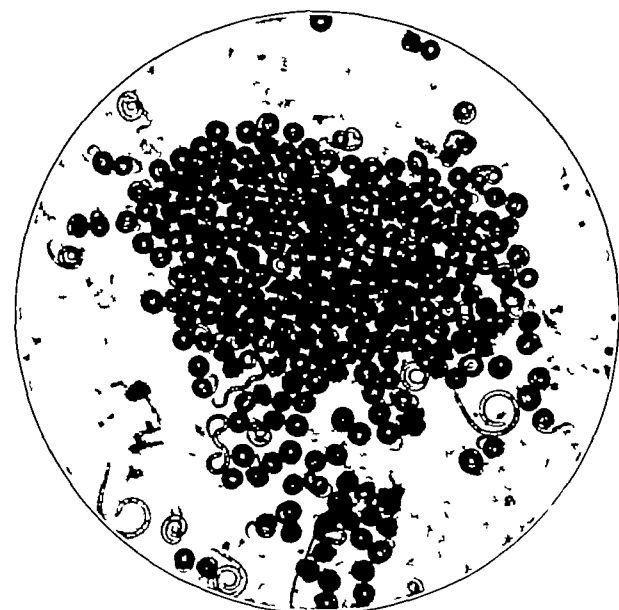


Fig. 3—Living larvae as seen in the sediment of well digested muscle (slightly reduced from a photomicrograph with a magnification of 25 diameters).

reliable clinical aid in the early diagnosis of trichinosis, Theiler, Augustine and Spink⁷ report counts of only 2 to 7 per cent in known cases from four to nine years after recovery. The normal eosinophil counts in our positive cases may thus indicate long standing or possibly light infestations.

7 Theiler, Hans, Augustine, D. L. and Spink, W. W. On the Persistence of Eosinophilia and on Immune Reactions in Human Trichinosis Several Years After Recovery. *Parasitology* 27: 345 (July) 1935.

The heart muscle from fifteen cases with trichinous diaphragms was digested and examined for larvae, but none were found.

Stained sections of muscle fixed in formaldehyde from three trichinous diaphragms were examined microscopically by serial sections. The pieces of muscle averaged 1.5 by 1 by 0.4 cm. The entire block of tissue was cut into ribbons 15 microns thick. Each tenth section was stained. Since the breadth of an encysted larva is about 250 microns, the staining of each tenth section should have revealed portions of each larva present. Microscopic examination of all stained slides from the diaphragm, which contained 3,800 larvae by the digestion method, revealed only three capsules. Slides from a diaphragm containing 350 larvae by the digestion method also showed three while those from a muscle yielding sixty larvae by digestion were free of capsules. The inadequacy of the slide method is more strikingly shown when only one slide is examined. In a series of 500 autopsies one slide was prepared from each diaphragm and in only one instance was an encysted larva seen.

It is worth noting that whereas we found 24 per cent of 200 diaphragms positive by the digestion method, McCoy, Miller and Friedlander⁸ found only 6.4 per cent of forty-seven patients tested in San Francisco positive to the intradermal test for trichinosis. Possibly a larger series of examinations would show closer agreement. We expect to study this correlation. Vital statistics of the Department of Health of San Francisco for the years 1931 to 1935 show a reported incidence of trichinosis ranging from 0.0016 to 0.0044 per cent of the total population for each year. This striking discrepancy between the number of cases reported and the number of positive cases found at autopsy demonstrates that the milder forms and sporadic cases of the disease usually pass unrecognized.

It is impossible to detect infected pork by practical methods of meat inspection. Two out of ten specimens of fresh pork sausage purchased in first class markets in a heavily patronized shopping district in San Francisco contained living *Trichinella*. Therefore, under the present methods of meat inspection it is necessary for the consumer to assume the responsibility of preventing trichinosis by either avoiding or thoroughly cooking all fresh pork.

SUMMARY

- 1 Digestion of 200 human diaphragms obtained at autopsy in San Francisco from individuals ranging from 2 to 87 years of age revealed forty-eight (24 per cent) infected with *Trichinella spiralis*.
- 2 Examination of diaphragms from twenty-five new-born infants gave negative results.
- 3 Living larvae were found in all the positive cases.
- 4 The number of larvae was usually small, being less than twenty to each 50 Gm of muscle in 79 per cent of the cases.
- 5 None of the clinical records of the positive cases revealed a definite history of trichinosis.
- 6 The highest eosinophil count recorded was 4 per cent.
- 7 The heart muscle from fifteen patients with trichinous diaphragms was negative.

8 Microscopic examination of stained slides for *Trichinella* is inadequate.

9 Since there are no practical methods of inspection for trichinous meat, the consumer must assume the responsibility of preventing trichinosis by thorough cooking all fresh pork.

2398 Sacramento Street

IMPERFORATE ANUS, BOWEL OPENING INTO URETHRA HYPOSPADIAS

A PRESENTATION OF NEW PLASTIC METHODS

HUGH H. YOUNG, M.D.
BALTIMORE

The case I am reporting here possesses extraordinary abnormalities of the intestinal and genito-urinary tract.

REPORT OF CASE

F. O. B. Jr., a youth aged 17, admitted May 24, 1933, had a hypospadias and also an imperforate anus at birth. Both the urine and the feces passed through the urethral meatus in the

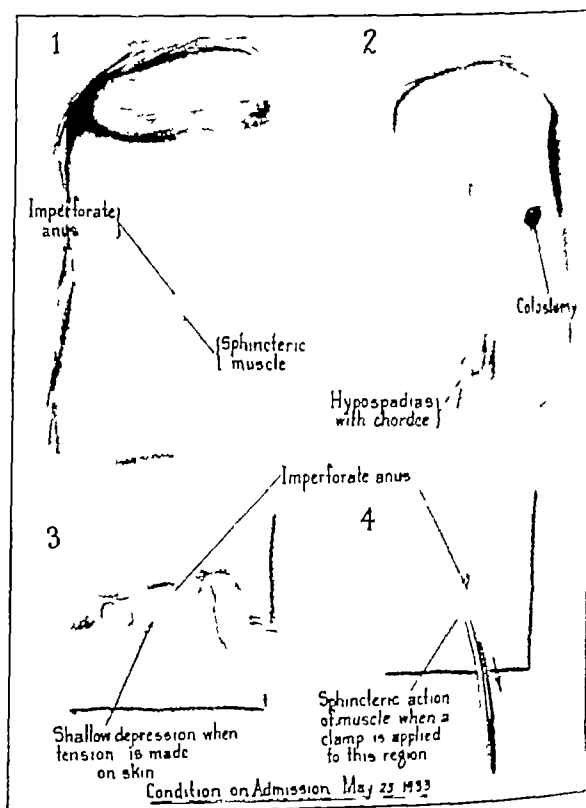


Fig. 1.—Condition on admission: imperforate anus; sphincter resected; nizable beneath skin; colostomy.

perineum. By means of laxatives the patient had little difficulty in evacuating the bowel through the urethra until he was 18 months of age, when Dr. Arthur D. Bevan performed a temporary colostomy. A hernia developed, and when the patient was 10 years old Dr. Bevan decided to make the colostomy permanent. About two years before the present admission an operation for hypospadias was carried out elsewhere, but with no success.

From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.

Read before the Section on Surgery, General and Abdominal, at the Fifty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

⁸ McCoy, O. R., Miller, J. J., and Friedlander, R. D. The Use of an Intradermal Test in the Diagnosis of Trichinosis. *J. Immunol.* 24: 125 (Jan.) 1933.

On admission the patient voided at normal intervals through the urethral meatus in the perineum, fecal contents were evacuated every two days by means of an enema through the colostomy. His general health had always been splendid.

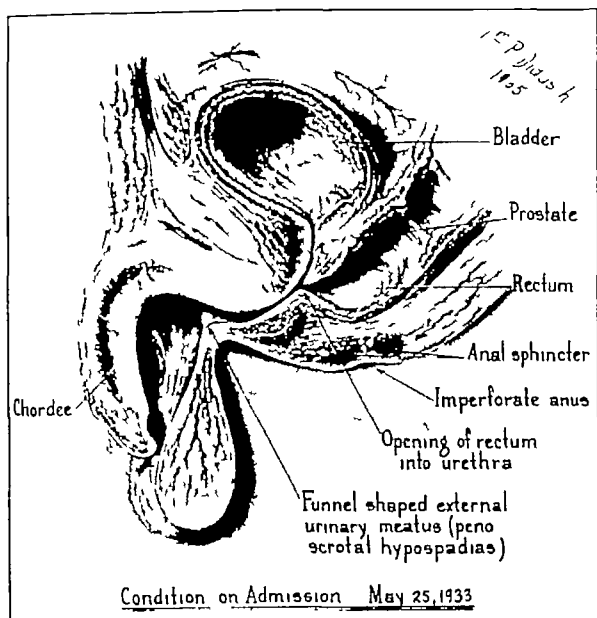


Fig 2—Sagittal section showing conditions present. Rectum opens into urinary tract below prostate. urogenital sinus opens into scrotum.

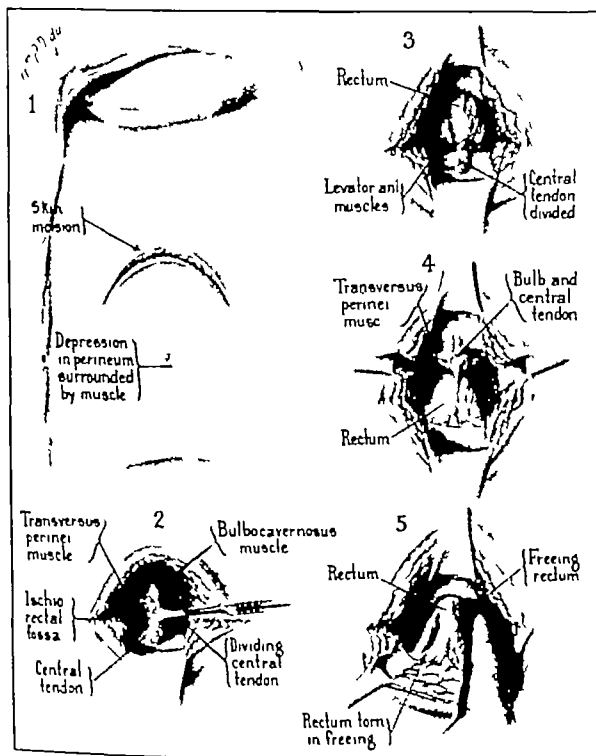


Fig 3—Operative procedures employed to sever connection between bowel and urethra.

The penis was normal in size. There was present a hypospadias, the opening of the urethra being within the scrotum 7 cm from the summit of the glans. The testes, epididymides, vasa, and cords were apparently normal. The anal opening was absent. In the proper position for it was a slight dimple of

the skin and around this was a definite ring (fig 1). Touching this ring with a pin produced contraction, which indicated that the anal sphincter was capable of functioning but with no bowel within it (imperforate anus).

An intravenous urogram showed no connection between the bladder and the rectum. A catheter was passed through the urinary meatus and 10 per cent sodium iodide was injected. A stereoscopic roentgenogram demonstrated that the fluid had passed into the rectum.

At cystoscopy an opening was found in the urethra 2.5 cm from the vesical orifice, through which the cystoscope passed and revealed a fairly large rectum (fig 2).

A series of operations was planned: (1) to straighten the penis and complete the urethra to the glans; (2) to separate the rectum from the urinary tract and bring it out through the anal sphincter after forming a new anus; and (3) to close the colostomy and anastomose the previously separated ends of the intestine. These procedures were carried out serially.

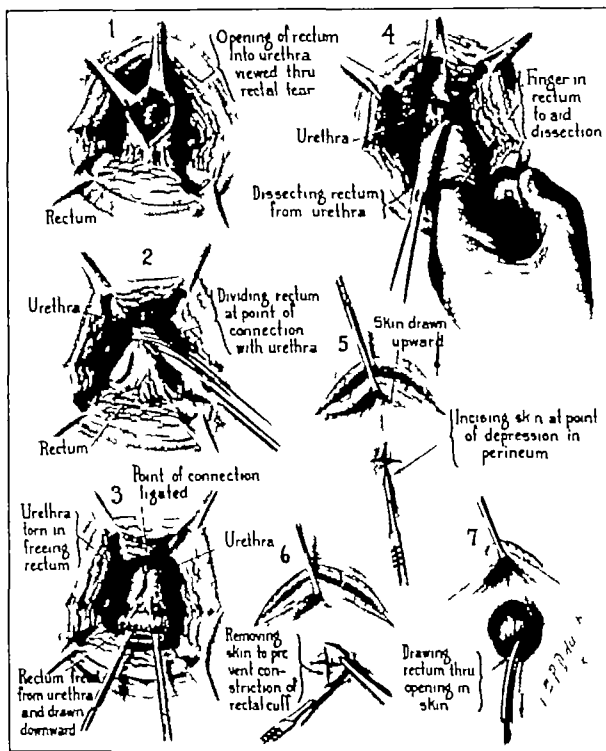


Fig 4—Operation to bring rectum out through sphincter in normal position (continued). After the rectum was isolated a crucial incision was made in the dimple of the skin (5). Into this a clamp was inserted through the center of the sphincter which was easily visible. After marked dilation a circular area of skin was excised (6) and the bowel drawn out through the sphincter and new anal orifice (7).

A suprapubic cystostomy for drainage was performed June 2, 1933 (Young-Frontz). An operation was then carried out to cure the congenital chordee.

Convalescence was entirely satisfactory.

The second operation was performed June 16 (H. H. Y.) including a perineal incision (fig 3) in front of the anal dimple, division of the central tendon, exposure of the lower blind end of the bowel, and isolation of the connection between the bowel and the urethra, which seemed to be in the region of the triangular ligament (fig 3). In the dissection a tear was accidentally made into the rectum (fig 4). No sphincteric muscle was found around the attachment between the bowel and the urinary tract. Clamps were placed around the recto-urethral connection, which was then divided, and the urethra was closed with catgut.

Attention was next directed to the anus. Crucial incisions were made in the dimple (5, fig 4) and a Halsted clamp was inserted through the center of the subcutaneous muscular ring (sphincter) which was then dilated. A ring of skin 2 cm in

diameter was excised around the opening and the aperture dilated again with larger clamps by means of which the bowel was grasped and drawn down through the newly made anus. The rectal wall was redundant and was brought down through the sphincter and skin without tension (7, fig. 4). Four cardinal sutures of heavy chromic catgut which held the rectal muscle to the subcutaneous tissues were placed. The approximation of the bowel to the skin was then carried out (6, fig. 5), the redundant wall being excised.

There was no perineal leakage of urine. The anastomosis between the bowel and the skin healed by first intention.

The patient returned Jan. 24, 1934 (fourth admission). The penis was almost straight on erection. Suprapubic drainage and the colostomy cup had been entirely satisfactory. Large female urethral dilators were passed into the anus, and the index finger was introduced.

February 10 the Thiersch plastic operation (H. H. Y.) was performed to make a new urethra (fig. 6).

The patient was readmitted June 19 (fifth admission). He was able to hold 200 cc. of water in the rectum and evacuate it at will. The rectum and anal sphincter were apparently capable of functioning normally, and it seemed time to close the colostomy.

Dr. William F. Rienhoff Jr. carried out this procedure June 29. The scar tissue around the colostomy opening was first excised. The bowel was freed from its surrounding structures. After a clamp had been applied to the proximal portion this part of the rectum was resected and the end turned in. This was reinforced by mattress sutures of silk. A lateral

One year later the patient returned for a check up. Defecation was normal and the anal sphincter functioned perfectly.

Space does not permit a discussion of the development of the rectum, the cloaca and the urogenital sinus or the abnormalities that produce atresia ani and urethral. It has also been necessary to omit references to the literature, but I believe that the operative technique

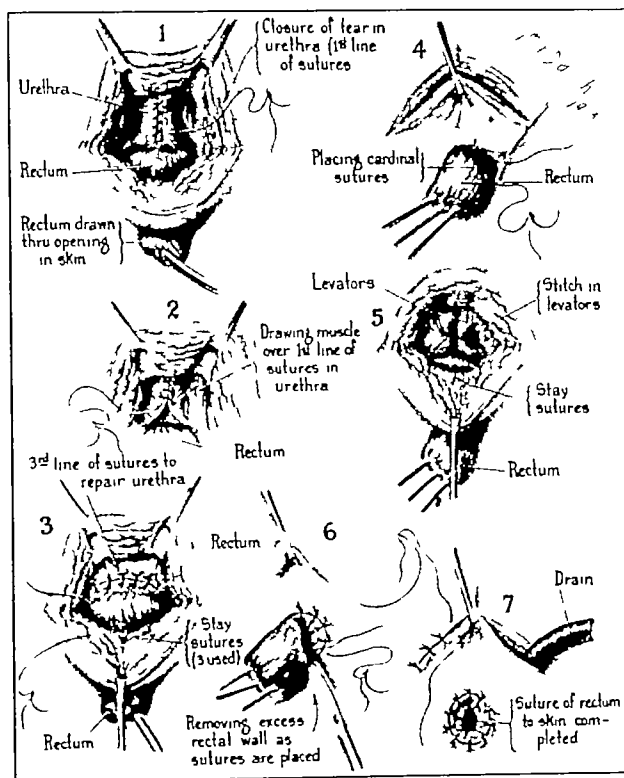


Fig. 5—Operation to construct anus (continued). Sutures of chromic catgut were placed through the bowel beneath the skin to hold the rectum in place (4) after which the skin and the mucosa were approximated by interrupted sutures of silk (6) and the redundant bowel progressively cut away.

anastomosis was then performed between the proximal and distal portions of the colon. The abdominal incision was closed without drainage.

Liquid bowel movements commenced the third day after operation. For a few days the patient had slight incontinence, but after a week he was able to defecate when the desire came on and he had perfect control. He recognized when he should have a bowel movement and defecation was quite normal. All urine was voided through the meatus at normal intervals. The conditions present are shown in figure 7.

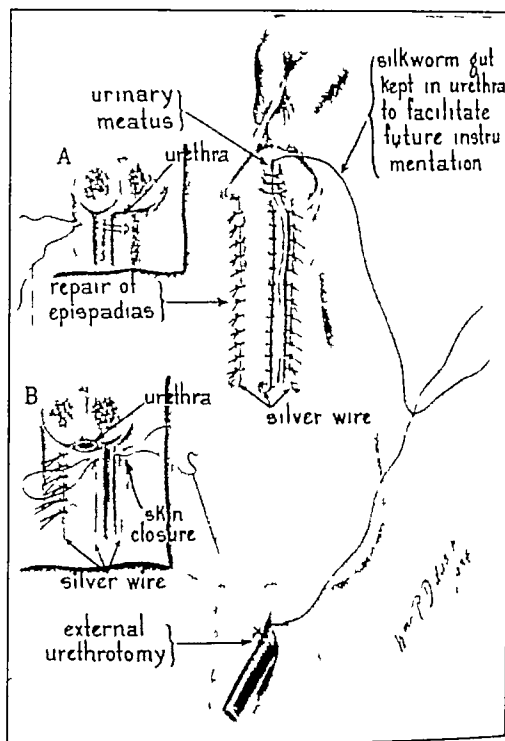


Fig. 6—Plastic operation to cure hypospadias (technic of Thiersch modified). A, triple mattress suture of fine silk to form urethra. B, same tied over a fine silver wire, placing of vertical mattress sutures over silver wire to approximate skin. Complete closure shown in central figure.

described herewith has never been carried out in a similar case. Dr. Wyland Leadbetter has also made a careful study and reports that there are only eight cases of imperforate anus connecting with the urethra in which the operator divided and attempted to close the urethral opening and of these only one was successful. Among the cases in which operation was performed Dr. Leadbetter was unable to discover any in which the rectum was brought out through the dilated and otherwise uninjured anal sphincter. All operations were apparently performed through a median perineal incision, and no operator used the curved perineal incision, with exposure of the space, as in perineal proctotomy. There does not seem to be a single instance in which the recto-urethral orifice was seen with the cystoscope and therefore no reported case in which a cystoscope was passed into the rectum and the rectum studied cystoscopically, as in the case here reported.

CONCLUSIONS

In a remarkable case of imperforate anus the boy connected with the deep urethra or urogenital sinus through which liquid feces escaped for eighteen months. The patient had worn a colostomy cup for fifteen years. The anal sphincter, although inactive for seventeen years, was visible in normal position beneath the skin. By means of plastic operations it was possible to cure the congenital chordee and hypospadias and make a good urethra transplant the rectum, bring it out

through the sphincter in a newly made anal orifice, close the colostomy, anastomose the ends of the bowel and thus obtain normal defecation and urination. The fact that the rectum and anal sphincter, after years of disuse, soon began to function normally is indeed remarkable. As far as I am aware, the operative procedures and result in this case are unique.

ABSTRACT OF DISCUSSION

DR. JOHN R. CAULK, St. Louis. I can only compliment Dr. Young for his excellent results in these troublesome cases. It testifies to the efficacy of plastic surgery in the hands of a master. Reconstructive surgery must have a brilliant future; it has had such a deplorable past. It is easy for average surgeons to do some shunting operation, such as colostomy, urethrotomy or uretero-intestinal anastomosis, but they have accomplished little except the creation of a chronic invalid. While the search for the anal sphincter and the restoration of bowel continuity may appear on the face of it the most difficult part of the operation, the repair of the urethra is indeed the most uncertain in the hands of the average surgeon and, I imagine, the most tedious even in the hands of a man who knows plastic

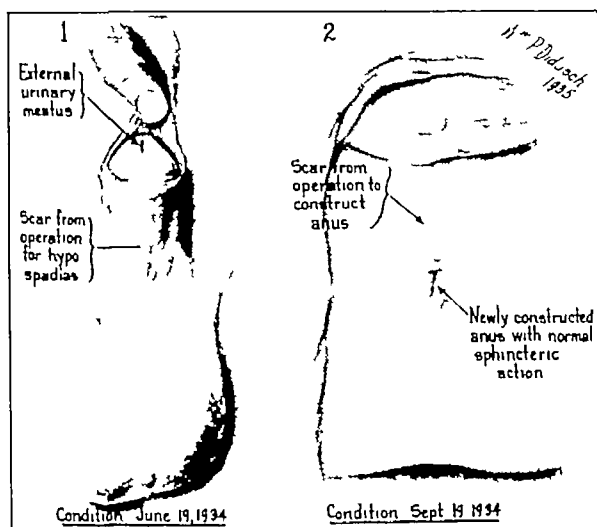


Fig. 7—Ultimate result. Hypospadias cured, normally functioning bowel with continent anal sphincter.

procedures. In many of the extensive defects, such as perineal or deep penoscrotal hypospadias or epispadias, surgeons resort too quickly to urethero-intestinal anastomosis. This to my way of thinking offers little so far as the patient's future is concerned, because the two important anatomic structures so vital to renal integrity are destroyed. These are (1) the non-compressing smooth bed in which the ureter lies in the bladder wall, and (2) the ureterovesical valve. The insertion of the ureter through the bowel musculature frequently results in compression of the outlet with resulting hydro-ureter, hydronephrosis and renal death. Destruction of the ureterovesical valve, nature's safeguard against ascending infection, makes renal infection imminent. It is therefore gratifying to see Dr. Young present a series of remarkable plastic operations and the results accomplished, particularly the one demonstrating an end result with restoration of nearly normal anatomic relation and normal physiologic function.

Allergy and Psychic Factors—There seems to be a growing realization, however, of the fact that in the so-called allergic diseases we are dealing not with disease entities in which allergens are the cause, but with a mechanism in the development and maintenance of which psychic factors play a more or less dominant role.—Dunbar H. F. *Emotions and Bodily Changes*. New York: Columbia University Press, 1935.

A REVIEW OF THE GASTRIC ULCER PROBLEM

SARA M. JORDAN, M.D.
BOSTON

Interest in the problem of gastric ulcer is constantly stimulated by the following questions, which arise frequently in the diagnosis and treatment of the gastric lesion:

1. Is the visualized lesion actually organic?
2. Is it benign or malignant?
3. Is it healable by medical treatment, or would surgical treatment give more adequate insurance against its recurrence, or against malignant degeneration?
4. Is it as necessary to guard against recurrence of the gastric ulcer as if it were distal to the pyloric sphincter?

Some of these phases of the gastric ulcer problem have been discussed so frequently that to review them seems superfluous, but even the most frequently discussed points are sometimes profitably reviewed by the light of additional material and in conjunction with other phases of the problem. In this study 119 cases have been used in which the diagnosis of gastric ulcer has been made on a reasonable basis and checked either by surgical exploration, as in thirty-one cases, or by follow-up studies varying from a few months to eleven and one-half years after medical treatment. The sex incidence of this group was sixty-two men and fifty-seven women, which demonstrates the familiar high ratio of women in the incidence of gastric ulcer as compared with that in duodenal ulcer.

The first question, which not infrequently arises, is the actuality of the visualized lesion, this being entirely a question of interpretation of an x-ray defect. The confusing conditions that give rise to this question are spasm, adhesions, cicatrization of an old lesion and visualization of a loop of small intestine which distorts the contour of the stomach. The form of spasm that most frequently confounds the diagnosis is the prepyloric constriction, which simulates an annular carcinoma or an ulcer of the posterior wall. This type of constriction may occur independently of any organic lesion, or it may be associated with cholecystitis, appendicitis, duodenal ulcer, an ulcer of the middle of the stomach proximal to the spastic area, or a gastro-enterostomy stoma. It may be persistent in spite of all drugs ordinarily useful in relieving spasm and disappear only through one of two procedures: (1) treatment of the underlying disease when this is not ulcer, (2) long continued general and local relaxation attained by ulcer therapy. In not a few of these cases, when the prepyloric spasm has finally been relieved, the real lesion is found in the duodenal cap, and the stomach itself is found to be entirely normal. In others of these cases it must always remain doubtful whether an ulcer has actually been present anywhere in the gastroduodenal field or whether the spasm alone has produced symptoms, which, with the spasm, have been relieved by treatment. Most surgeons have had the experience of operating on patients suspected of having a prepyloric lesion on whom examinations are negative. On the other hand, study has shown that the persistent rigid spasm of the prepyloric area of the stomach is usually the result of a posterior wall lesion in that area. In the untreated stage an irregu-

From the Department of Gastro-Enterology, Lahey Clinic.
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larity in the contour, or a definitely visualized crater, often missed in the routine fluoroscopic examination, is likewise present, which localizes the actual lesion. With treatment, the irregularity or the crater and the rigidity of the spasm disappear if the lesion is benign, and a flexible type of spasm is seen which indicates the healing of the lesion. If adhesions occur with the healing, the appearance of spasm persists and the end result is visualized as an elongated type of pylorus. If there are no adhesions, there is a complete return

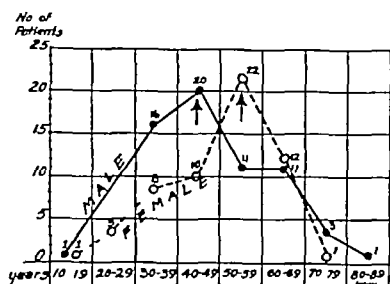


Fig 1—Sex and age incidence in 119 cases of gastric ulcer. Male sixty two female fifty seven.

to normal in the appearance of the pyloric end of the stomach. Visualization of the mucosal relief and the detection of craters by palpation, together with gastroscopy, are important aids in the differential diagnosis of prepyloric spasm and organic lesion,

but even with these diagnostic aids there will undoubtedly always be a small group of cases that will require trial medical management and careful check up observations or exploratory surgery with actual visualization for positive differential diagnosis. Adhesions formed by cicatrization of the healing ulcer, or occasionally from the scar of an operated lesion, may so deform the stomach that with recurrent symptoms and visualized deformity of the prepyloric area, or especially of the middle part, it may be very difficult to determine whether a recurrent or new ulcer or a malignant lesion has developed, or whether the deformity represents only the old adhesion. The familiar hour glass deformity, found in twenty-four cases of our series, may be due to adhesive bands that firmly or gently constrict the middle part of the stomach or to adhesions of the cicatrix of the posterior wall ulcer to the adjacent pancreas. Both these explanations have been found by surgical exploration in certain cases of this group studied. In such cases the recrudescence of an ulcer or a new benign or malignant lesion is often exceedingly difficult to demonstrate by its actual crater because of the obscuring deformity produced by adhesions. Exploration during operations for other diseases such as removal of the gallbladder have demonstrated that what appeared to be a rather narrow isthmus in the hour glass deformity was actually a very slight narrowing of the lumen of the stomach by omental adhesions. In two of our cases, the healing of a posterior wall ulcer appears to tie by adhesions the prepyloric area of the pars media in such a way that without the data for tracing the chronological steps in the formation of the defect it would be difficult to diagnose the deformity. Another type of defect of contour is that produced by the silhouette of a loop of jejunum or third part of duodenum against the lesser curvature of the stomach. This may give the appearance of an irregular area suggesting carcinoma or of a smooth crater suggesting ulcer. In a case recently seen by me there is a diverticulum of the third part of the duodenum which when filled simulates an ulcer defect off the lesser curvature and cannot be displaced from this location. Such are the difficulties that may present themselves in the differentiation between a real and a phantom lesion and for the solu-

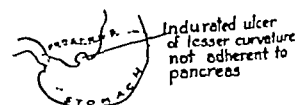
tion of these difficulties all possible diagnostic measures are often needed. Exploratory laparotomy must sometimes be the final procedure, but most cases can be diagnosed accurately if adequate use is made of repeated fluoroscopic examinations with spot film and of trial observations and treatment, checked by repeated radiologic examinations. In these cases, gastroscopy will undoubtedly be a most valuable aid.

The second of the questions involved in the problem of gastric ulcer—Is the lesion benign or malignant—concerns the gastric lesion which by x-ray examination is not an obvious carcinoma. In other words all gastric lesions should be definitely classified as malignant or potentially malignant, or as benign ulcers which are healing and are later healed. Ideal gastroenterology should include as part of its program the follow up of every gastric lesion, so that unhealed lesions may be detected. This statement implies that if a lesion heals it can be regarded as innocuous, which is, in my opinion, a fact, but certain conditional stipulations must also be stated. The first is that actual and complete healing must occur, and the second, that the stomach in which an ulcer has been found should be checked by its possessor and its medical guardian with especial care, so that recrudescences of the same lesion or new lesions can be found and followed.

In deciding whether the questionable lesion is benign or malignant, certain factors in the diagnostic data may be considered. The helpfulness of the history is our first consideration. The value of a history depends of course, on two important factors—the accuracy of observation, memory and reporting of the patient and

M-47 yrs

Oct 1929 Operation for acute gallbladder with fistula between gall bladder and duodenum



Between Oct 1929 and June 1930



Reduction in size of niche to disappearance of niche

Jan 1932 Acute upset with cold, smoking indiscreet eating



Subtotal Resection



Fig 2—X-ray contours showing recurrence of indurated ulcer with involvement of posterior wall in a man aged 47

the development of the investigative sense of the questioner. A patient may be recorded to have lost weight when the true cause imposed restriction of diet is not recorded or he may be said to have no appetite when he either fears the consequence of indulging his appetite or has an appetite only for foods that are not allowed him. He may be said to have vomited blood when only the traumatic fresh blood from the act of vomiting is found in the vomitus. Such may be the patent errors. The more subtle forms of mistakes

result from the inability of many individuals to recall details of their own ills even in a temporary remission of those ills. In general, however, certain facts in the history can at least be regarded with interest when a decision between malignancy or benignity must be made in the case of a gastric lesion. The history of short duration or of symptoms not compatible with ulcer symptoms is in favor of a malignant condition. A recent change in the character of symptoms has long been considered to be suggestive of a malignant con-

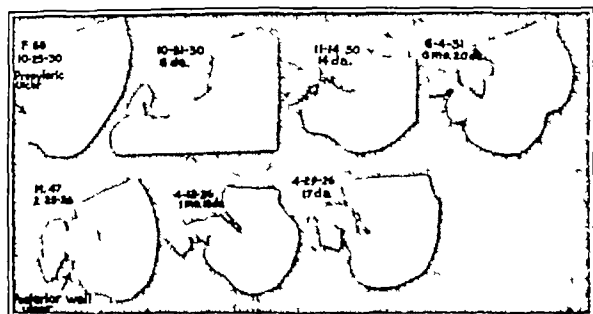


Fig 3—Prepyloric ulcer and posterior wall ulcer showing changes with healing

dition, and study of a larger group of malignant lesions confirmed this opinion. However, twenty-two cases in our series of gastric ulcer presented a history of less than a year, while twenty-three cases showed a recent definite change in the symptoms, chiefly, however, an increase in their severity. Nausea and vomiting are found in our cases of gastric ulcer more frequently than in duodenal ulcer, in this series of gastric ulcer cases in fifty instances. This is not due to an obstructive condition of the pylorus, for, in the cases studied, barium is abnormally retained in only twelve cases. It is apparently due to irritation, which causes pylorospasm with the intake of food. Probably for the same reason food relief of the distress is less common in gastric ulcer than in duodenal ulcer, twenty-nine patients of the series giving a history of no food relief. These two data in the history, presence of nausea or vomiting to a degree greater than in duodenal ulcer and the frequent absence of food relief are however not useful in differentiating the ulcer from the malignant lesion. They rather add to the difficulties of differentiation, since carcinoma of the stomach is often attended by these symptoms. The history of loss of appetite and loss of weight is likewise not particularly helpful, anorexia, the classic symptom of malignancy, having been found in twenty-six of the gastric ulcer cases and severe loss of weight in fourteen cases. As far as the history is concerned therefore, the observations in this group of cases studied may be summarized to indicate that certain data are found which may be considered as differentiating between the duodenal and the gastric lesion but, because they occur in both the benign and the malignant gastric lesion are of no value in deciding the question of benignity or malignancy. These data are (1) the length of the history and recent change in symptoms (2) the absence of food relief and (3) the frequency of vomiting and loss of appetite and weight without obstruction.

The chemistry of the gastric contents, particularly the presence or absence of hydrochloric acid after a test meal is always of interest. In general it may be said that the gastric ulcer case usually presents free hydrochloric acid and the carcinoma usually shows

none. Exceptions are found in both groups, but acid in the carcinoma case is more frequently found than no acid in the ulcer case. Only three cases in this series showed achlorhydria, and this occurred only temporarily during the treatment. Stool examination for occult blood is definitely helpful in differentiating ulcer from carcinoma, if observations can be made with sufficient care and over a sufficiently long period. It is, of course, of no value if a quick decision must be made, for an ulcer case usually shows occult blood until it is almost healed, and an occasional negative stool is found in a carcinoma case. Furthermore, some time is usually required to obtain conditions under which stools can be accurately tested for occult blood, the casual examination being rarely of any value.

After the data of history and chemical changes have been analyzed and their adjuvant value estimated, the x-ray examinations assume the decisive role in differentiation. The important x-ray criteria are of two kinds (1) the original appearance of the lesion by x-rays and (2) changes in the original appearance of the lesion with trial treatment. It is undoubtedly true that the lesion of the pars media which appears in the original x-ray examination as the protruding crater off the lesser curvature in the pars media and without involvement of the posterior wall is practically always benign and shows a tendency to relatively quick healing, with synchronous diminution in the size of the crater. In the series studied, fifty-nine ulcers were of this type and the average time of proved healing was from three to four weeks. Fourteen of these cases were treated surgically. Proved healing is, in my opinion, demonstrated by the complete disappearance of the crater. It is believed that complete healing occurs when there is complete disappearance of the crater (1) because the clinical condition of the patient invariably conforms to the x-ray appearance of the lesion and (2) because surgical exploration during operations for intercurrent diseases has demonstrated the almost completely healed

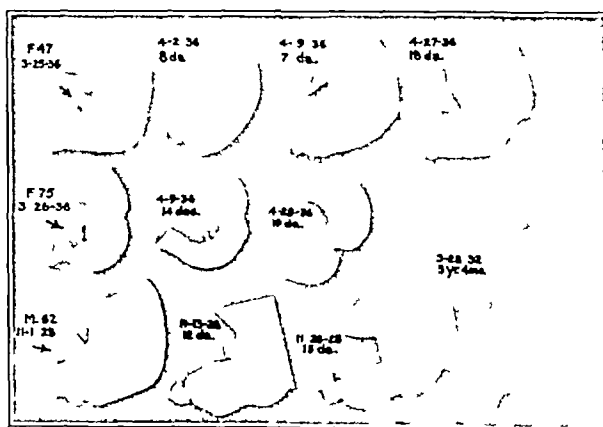


Fig 4—Three lesser curvatures showing changes in shape of crater in healing

lesion and the completely healed lesion at stages correspondingly visualized by x-rays. The almost completely healed lesion, frequently termed a "dimple" by the roentgenologist, was still palpable as a thickened area without a crater and with adjacent discretely palpable lymph nodes later microscopically diagnosed as chronic inflammatory while the completely healed lesion was seen and felt as the usual scar of an ulcer.

It is equally true that the less common prepyloric lesion is sometimes malignant and that the lesion of

the posterior wall, whether in the median or in the prepyloric area, shows much less tendency to heal and, perhaps because it heals less readily, a very definite tendency to become malignant. Twenty-one cases were prepyloric. Their healing time was usually longer, and eleven of these were treated surgically. It is possible, even probable, that the chronicity of the ulcer of the posterior wall depends on its proximity and adhesions to adjacent structures, notably the pancreas. In one case (fig 2) the ulcer was seen and palpated by the surgeon during a gallbladder operation and found to be an indurated lesion on the lesser curvature, without adhesions. In the following two and one-half years it gradually disappeared at first and recurred later in the same place and, when resected, was found to be larger and again indurated and now adherent to the pancreas. It is my opinion that certain of these ulcers of the posterior wall become a small group in the large category of gastric carcinomas. Two of the three cases of this series in which later carcinoma developed were ulcers of the posterior wall of the prepyloric area in which complete healing was never demonstrated because the patients could not be followed. Autopsy in one of these cases showed two lesions—a carcinoma of the posterior

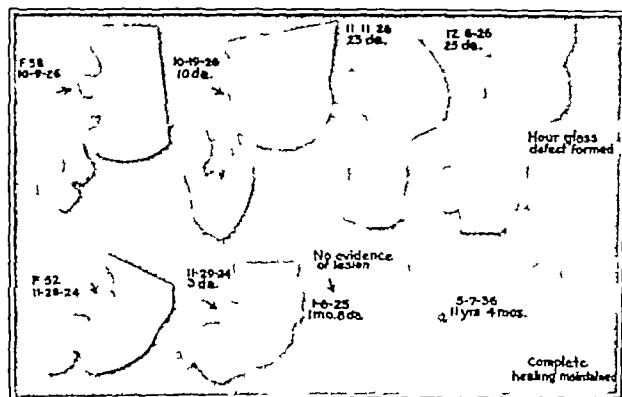


Fig. 5.—Two large lesions of the lesser curvature showing two types of healing.

wall of the stomach and a malignant ulcer of the posterior wall of the stomach in the location of the previously demonstrated ulcer. The other ulcer case, which later developed into a carcinoma, was that of a woman, aged 55, who in 1929 had an ulcer of the posterior wall of the pars media of the stomach which healed and five years later recurred. A year following the recurrence and almost seven years after the original treatment, she was found to have extensive carcinoma of the pars media of the stomach. The involvement of the posterior wall is indicated radiologically by an extension of the lesser curvature crater down on the posterior surface, or a filling of a definite crater on the posterior wall, which is visualized with the patient lying in the supine position but is not visualized when the patient is standing or is in the prone position. There usually is also an incisura of the greater curvature or a constriction in the pars media of the hour glass type. A crater in the lesser curvature may or may not be visualized.

With all the diagnostic data (history, chemistry and x-ray examinations) at hand one is still not infrequently doubtful as to the benignity of the lesion. Two methods of safeguarding the patient against neglect of a present malignant condition or against future malignant degeneration of an ulcer are (1) a limited period

of trial management to determine the immediate reaction to treatment and (2) a careful follow up of all cases of gastric ulcer to detect recurrences and malignant degeneration. The length of time required to fulfil the three criteria of healing—the disappearance of symptoms, of occult blood in the stools and of the x-ray defect—varies, especially as far as the x-ray defect is concerned. Symptoms are usually relieved as soon as bed rest and treatment have been well started. Occult blood in the stools has usually completely disappeared within two to three weeks after the beginning of treatment. The x-ray defect shows a definite change within a few days, but its complete disappearance may require from three to eight weeks, and sometimes, in the case of the posterior wall lesion, even longer. In that time the crater on the lesser curvature should shrink in size which it usually does, first by a contraction of the base and then by a diminution in the depth of the crater until finally there is no interruption in the course of the peristaltic wave through the previously involved area. The rigid prepyloric spasm and crater should change to flexible spasm and no crater, and finally to a normal or an elongated pylorus. The crater of the posterior wall and the attendant rigid constriction of the pars media should disappear. These changes represent the healed ulcer (figs 3, 4 and 5). Thus the limited period of trial management has in such case proved both diagnostic and therapeutic. This, however is only the first step in the provision of insurance against a malignant condition.

The third question to be discussed in this review of cases is: Is the gastric ulcer healable by medical treatment and forgettable after healing, or would surgical treatment give more adequate insurance against its recurrence or against malignant degeneration? In the discussion of differentiation between malignant and benign lesions, it has already been stated that both anatomic and clinical evidence of healing has already been adequately coordinated with x-ray evidence to prove that complete healing of gastric lesions may occur. Such evidence was presented by eighty-eight cases in this series. In thirty-one cases operation was done (1) because the lesion was suspected of malignancy, which, however, was not found by microscopic examination or (2) because recurrence of the lesion was considered undesirable from the point of view of a future malignant condition. These are the usual indications for surgery in gastric ulcers as contrasted with those in duodenal ulcer, in which repeated hemorrhage and perforation occur much more frequently. The other surgical indication, uncontrollable distress, is rarely found in the gastric ulcer unless it is a posterior wall lesion with penetration into the pancreas. Recurrences, however, are evidences of chronicity, and chronic irritation in a field as prone to malignant conditions as the stomach should be regarded as highly undesirable. Especially is this the case in the lesion of the prepyloric area or of the posterior wall of the middle part of the stomach, where it may be assumed from this study that the dangers of malignancy are greater than along the magenstrasse itself. There is evidence in the histories of cases in this series to show that fully developed recurrences may be suddenly precipitated by factors such as colds, fatigue, indiscretions of diet, smoking and alcohol which respond just as quickly to medical treatment as did the original lesion and if these incidents involve the ulcer of the lesser curvature of the pars media it is my opinion that they are innocuous. Recurrent lesions of the prepyloric area

or of the posterior wall should, in my opinion, be regarded as potentially malefic

That surgical treatment gives greater security against future malignancy has always been assumed. This series contains three cases in which gastric ulcers have occurred in the lesser curvature of the stomach following gastro-enterostomy and two in which excision of gastric ulcers and plastic repair have been followed by the development of new ulcers. Adequate follow up evidence of radical resection will not be available until at least five to ten more years has passed, but so far it appears to accomplish the purpose of averting malignant degeneration by the excision of most of the ulcer bearing part of the stomach. Whether the mortality from a potential malignant growth is greater than the operative mortality of resection will be determined by the difficulties of the particular operation, the condition of the patient and the skill of the surgeon.

The final question here propounded, as to the necessity for prophylaxis against recurrent gastric ulcer as compared with that necessary in the case of duodenal ulcer, has been of interest to me, as I formerly believed that greater reliance could be placed on the healing of a gastric lesion than on that of a duodenal lesion, and greater freedom from restrictions could be enjoyed after treatment. Further experience has demonstrated the fact that those patients who have had a gastric ulcer and continue to live a so-called ulcer life after treatment are less prone to recurrences than those who consider themselves ulcer proof and live accordingly. In only one respect has a difference been noted: the gastric ulcer case requires less neutralizing medication, probably because the hydrochloric acid is rarely above normal value, even with ulcer activity. To be secure, however, these patients must practice care in their diet, abstention from smoking and alcohol and, above all, avoidance of extreme fatigue and worry. In other words the shunning of certain temptations of the flesh and all vexations of the spirit is as important a guiding principle in gastric as in duodenal ulcer.

605 Commonwealth Avenue

ABSTRACT OF DISCUSSION

DR. RUSSELL S. BOLES, Philadelphia. The differentiation between a disturbance of function and an organic lesion was admirably discussed by Dr. Jordan. I am convinced that the time has come to call a halt on functional diagnoses. It is well to remember that "pylorospasm," irritable duodenum and so on not infrequently indicate early organic disease. In determining whether a gastric ulcer is benign or malignant greater accuracy in diagnosis is obtained when such laboratory data as the acidity and the x-ray appearances are subjugated to general clinical considerations. After all, in most cases a good color, a good appetite and a maintenance of weight and strength would indicate a benign lesion, the contrary especially in older individuals, portends a malignant process. I subscribe to all that Dr. Jordan has said regarding the character and behavior of the lesions she noted but I know she will pardon a suggestion for a broader consideration of peptic ulcer. Preoccupation with a lesion may readily divert us from the disease itself of which the ulcer perhaps is but a local manifestation. The more I observe peptic ulcer disease the more I am impressed with the possibility of its being a form of peripheral vascular disease. The sequence of events in peripheral vascular disease is spasm, thrombosis, necrosis and finally ulceration. The predominance of certain types of peripheral vascular disease in the male sex, in the middle years of life, the influence of seasonal and barometric changes and the unquestioned effect of tobacco all, in a similar type of individual, bear strong testimony to the similarity of these

diseases. While x-ray appearances and acidity have a certain value in the diagnosis and differentiation of gastric lesions an exploration into newer fields is in order. Pharmacologic, pathologic and physiologic research of the peripheral circulation of the stomach might hold much of promise.

DR. SIDNEY A. PORTIS, Chicago. A gastro-enterologist is frequently concerned with the malignancy or benignancy of antral lesions or with the question of whether the roentgenologic evidence is a reflex manifestation from some extragastric lesion. Four factors are concerned in antral lesions: a high lying or midgastric lesion, causing a spasm of the antrum; an intrinsic lesion of the antrum, pressure from extragastric tumors more regular in outline or associated with perigastric adhesions, reflex spasm from the gallbladder, duodenal, especially posterior penetrating ulcers, and other extragastric lesions. Atropine and belladonna derivatives occasionally relieve this spasm but sometimes the reflex spasm persists in spite of antispasmodics. I found in my roentgenologic work that nonorganic spasms of the antrum completely disappear if while the patient is on a horizontal table he inhales the fumes of a crushed amyl nitrite pearl and is under the momentary influence of the drug. These lesions of the antrum offer great concern particularly because a gastric polypoid localized in this region is not uncommon, and therefore it is a question of clinical judgment as to just what should be done. The question of the midportion gastric ulcer is one that concerns us a great deal at the present time. Since the introduction of the gastroscope it has been possible to solve more clearly the problem of benignancy or malignancy without the exploratory operation. The mere healing of a gastric lesion is no definite criterion of its benignancy. Malignant gastric lesions may heal and the roentgenologic evidence almost completely disappear. If achlorhydria is present and there is no history of a previous achlorhydria before symptoms appeared it has always been an ominous symptom and is suggestive of an inoperable carcinoma, because achlorhydria is merely a manifestation of a cachexia. The continued presence of occult blood in the stool after medical management is suggestive evidence of malignancy because as a rule the blood completely disappears in cases of a benign lesion. The question as to medical or surgical treatment is again more a matter of opinion than of fact. I know of no gastro-enterologist, roentgenologist or surgeon who either at the operating table, in the fluoroscopic room, or from clinical experience can say with any degree of certainty that a given lesion is benign or malignant. The final diagnosis rests with the microscope. If we admit that 5 per cent and in some places even 10 per cent, of all gastric lesions are either malignant in their inception or become so during their life cycle it must frankly be said that there is at least a 5 per cent mortality in individuals with a gastric lesion beyond the age of 35. Therefore a patient with a gastric lesion is much safer when surgically treated.

DR. HENRY A. RAFSKY, New York. I would like to suggest to Dr. Portis to proceed cautiously with amyl nitrite in ulcer patients because most of them have hypotension. Dr. Jordan mentioned a point that should be emphasized, namely, the duration of the symptoms. Given a patient with an ulcer history, a comparatively large deformity on the lesser curvature and hydrochloric acid in the gastric contents, a long history usually indicates benignity, a short history malignancy. However each case of gastric ulcer must be individualized and, if treated medically, should be periodically checked for at least five years. Hemorrhagic gastritis may simulate or even complicate a gastric ulcer. During the past year I have seen at the Lenox Hill Hospital, two patients with ulcer histories who succumbed to severe gastric hemorrhages. In one a hemorrhagic gastritis and a prepyloric ulcer were present, and in the other a hemorrhagic gastritis, without any ulcer was found. I should like to ask Dr. Jordan what the incidence of combined gastric and duodenal ulcers was in her series. An attempt was made to treat a patient with intubation. When the tube did not pass the pylorus this method was discontinued. A Sippy dietetic regimen with alkalis was likewise unsuccessful. The surgeons did not think an operation was feasible in view of the size and location of the gastric ulcer. Injections of histidine monohydrochloride and a modified Sippy diet were then employed. The patient became symptom free

and was discharged feeling very well. I do not know whether the result was incidental or due to psychotherapy, nonspecific therapy or overcoming the amino acid deficiency. These facts are not mentioned to present any brief for any form of treatment but to show that in refractory gastric and duodenal ulcer patients more than one method may have to be employed to make these patients symptom free.

DR. WALTER L. PALMER, Chicago: I wish to make one point and that is the importance of an additional method of direct diagnosis mentioned by Dr. Jordan, namely, gastroscopy. Dr. Schindler talked to you yesterday of gastritis. It has been my good fortune to have his aid in the diagnosis and observation of a number of cases of gastric ulcer. We had hoped to be able to present a paper on that subject at this time but have had to defer it until a later date. Gastroscopy is of inestimable value in helping us to answer the three old questions always propounded by Dr. B. W. Sippy: 1. Is ulcer present? A negative gastroscopic examination is not absolute, but, on the other hand, when one sees an ulcer gastroscopically, it is definite and one is then able to say positively that it is not an old deformity but an active ulcer. 2. Is it benign? And here gastroscopy, to my surprise, has given definite and positive information thus far. I am forced to admit that in our experience Dr. Schindler has not yet made a mistake in his differentiation between a benign and a malignant lesion gastroscopically. 3. Is the lesion healed? When we follow the course of an ulcer with the gastroscope as well as with the x-rays and see it diminish in size and finally disappear so that we can no longer demonstrate it with either method. I, for one, am satisfied that the ulcer is benign and that it is healed.

DR. WILLIAM CARPENTER MACCARTY, Rochester, Minn.: I have been talking and writing about this subject for twenty-five years, and most of the things I have said and written have been misinterpreted and misquoted. I know of no group of diseases which requires more experience and intelligence in the handling than cancer and ulcer of the stomach, ulcer of the duodenum, cholecystitis and a few other conditions in the upper part of the abdomen. I have heard many papers on this subject in this country and in Europe. I don't know Dr. Jordan except by reputation but I am going to tell you that her paper is the most intelligent presentation I have heard in a long time. Her paper was extremely logical, tolerant, very sincere. She didn't get lost in her facts and reasoning, but her discussers did.

DR. SARA M. JORDAN, Boston: Dr. Boles mentioned peripheral vascular diseases as the cause of peptic ulcer and that immediately called to mind a patient who had had a massive hemorrhage in the duodenum and finally died after the second, uncontrollable hemorrhage in whose case our pathologist said undoubtedly the ulcer was that type of ulcer. Now there are ulcers and ulcers, and I feel certain that Dr. Boles's explanation of ulcer does fit in a certain group of ulcers, but I don't feel that it fits all of them. The question of faith in healing—Dr. Portis and I differ a great deal in that. Dr. Palmer I am glad to notice agrees with me that when an ulcer is healed one can forget it as long as it is healed, as far as any question of malignancy goes. I do that with regard to any lesion in any other part of the body and I think it is perfectly possible to do the same with regard to lesions in the stomach. I agree with Dr. Portis that achlorhydria in a gastric ulcer is practically unknown. I had two cases which showed achlorhydria during the course of treatment. Dr. Rafsky asked about the incidence of gastric and duodenal ulcer and the combination of the two. I haven't the figures but my impression is that about 5 per cent of our gastric ulcers have an associated duodenal ulcer. I have felt that gastroscopy is an absolute need in the diagnosis of the gastric lesion and I congratulate Dr. Palmer on having had this help already. We are prepared now to call it to our aid. There was just one disappointing thing in a conversation I had with Dr. Schindler yesterday. I had hoped that gastroscopy would be able to help us in the prepyloric lesion but I found he was not as hopeful as I was about that particular lesion. He said that it certainly will tell whether spasm is present or not but whether a crater is also present is not always possible to determine even with gastroscopy.

OBSERVATIONS ON THE ETIOLOGIC RELATIONSHIP OF ACHYLIA GASTRICA TO PERNICIOUS ANEMIA

V. FURTHER EVIDENCE FOR THE ESSENTIAL PARTICIPATION OF EXTRINSIC FACTOR IN HEMATOPOIETIC RESPONSES TO MIXTURES OF BEEF MUSCLE AND GASTRIC JUICE AND TO HOG STOMACH MUCOSA

W. B. CASTLE, M.D.
AND
THOMAS HALE HAM, M.D.
BOSTON

Observations on patients with Addisonian pernicious anemia have appeared to us to demonstrate that the immediate basis of the anemia is a "conditioned" defect of nutrition. Thus, patients suffering from pernicious anemia are seemingly unable to derive from food some substance essential for normal function of bone marrow. The nutritional defect in such patients is apparently caused by the failure of a reaction which occurs in the normal individual between a substance in the food (extrinsic factor) and a substance in the normal gastric secretion (intrinsic factor). This conclusion is based on the following evidence derived from previous observations¹ on cases of Addisonian pernicious anemia.

1. The daily administration of (extrinsic factor) 200 Gm. of beef muscle is without significant effect on blood formation.

2. The daily administration of (intrinsic factor) from 150 to 300 cc. of normal human gastric juice is without significant effect on blood formation.

3. If, however, such amounts of each substance are administered daily in such a way as to permit contact either before or after administration to the patient, clinical improvement and evidence of increased blood formation are usually apparent within ten days and are progressive for the duration of such therapy.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School.

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Owing to lack of space, this article has been abbreviated in *THE JOURNAL* by the omission of a section of the text and corresponding bibliography. The complete paper will appear in the authors' reprints.

The observations on certain patients were made possible through the kind cooperation of members of the staff of the First and Third Medical Services (Tufts) of the Boston City Hospital. We are indebted to Miss Margaret Evans and to Miss Eleanor Fleming for assistance in performing the blood studies.

1. These include:

- (a) Castle, W. B.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. I. The Effect of Administration to Patients with Pernicious Anemia of the Contents of the Normal Human Stomach Recovered After the Ingestion of Beef Muscle. *Am. J. M. Sc.* 178: 748 (Dec.) 1929.
- (b) Castle, W. B., and Townsend, W. C.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. II. The Effect of the Administration to Patients with Pernicious Anemia of Beef Muscle After Incubation with Normal Human Gastric Juice. *ibid.* 178: 764 (Dec.) 1929.
- (c) Castle, W. B., Townsend, W. C., and Heath, C. W.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. III. The Nature of the Reaction Between Normal Human Gastric Juice and Beef Muscle Leading to Clinical Improvement and Increased Blood Formation Similar to the Effect of Liver Feed. *ibid.* 180: 305 (Sept.) 1930.
- (d) Castle, W. B., Heath, C. W., and Strauss, M. B.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia. IV. A Biologic Assay of the Gastric Secretion of Patients with Pernicious Anemia Having Free Hydrochloric Acid and That of Patients Without Anemia or with Hypochromic Anemia Having No Free Hydrochloric Acid and of the Role of Intestinal Intercourse of Hematopoietic Substances in Pernicious Anemia. *ibid.* 182: 74 (Dec.) 1931.
- (e) Strauss, M. B., and Castle, W. B.: The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in the Related Vascular Anemias. Activation of Yeast Derivatives with Normal Human Gastric Juice. *New England J. Med.* 207: 65 (July 9) 1932.

Apparent confirmation of these basic observations has been obtained by various workers, notably Groen,² Hartfall and Wits,³ Helmer, Fouts and Zervas,⁴ Middleton and Stiehm,⁵ Miller and Rhoads,⁶ Reimann,⁷ Singer,⁸ Ungley and James⁹ and Wilkinson and Klein,¹⁰ who have agreed with us in supposing the necessity of both an extrinsic and an intrinsic factor for such increased blood production in pernicious anemia. In a recent paper, however, Greenspon¹¹ has presented the results of experiments from which he has drawn the conclusion that a food (extrinsic) factor is unessential to the production of the positive effects on blood formation in pernicious anemia which we reported from incubated mixtures of beef muscle and gastric juice. He believes that our negative results with normal human gastric juice alone were due to destruction of an "antipernicious anemia principle" by peptic action during the preliminary incubation usually employed. As a corollary, it was inferred by Greenspon that when gastric juice was incubated with beef muscle "the native pepsin in the gastric juice must have been adsorbed by the ground beef" and thus "the beef served to protect the antipernicious anemia principle and not as a substrate for the action of an enzyme-like 'intrinsic factor'."

Previous evidence exists, however, which would appear to render Greenspon's conclusions unlikely. In our former observations¹⁰ on patient 11, gastric juice which was not incubated before administration yielded negative results. Middleton and Stiehm⁵ and also Groen² have obtained similar negative results. Nevertheless, according to Greenspon's theory the activity of such unneutralized gastric juice might have been destroyed by peptic hydrolysis *in vivo* after administration to the patient. Therefore these observations are not necessarily conclusive. The experiments of Helmer, Fouts and Zervas⁴ can scarcely be so criticized, however, since the gastric juice employed by them was depepsinized and brought to a p_H of 4.7 to 5 before administration. In case 8 of their series the daily administration of 150 cc of such gastric juice was ineffective.

It is thus not certain that Greenspon's experiments throw doubt on the conclusions that we have drawn. Furthermore for reasons that will be presented later, it seems to us that, unless the necessity for a food factor is conceded, our observations as well as his own do not necessarily disclose the immediate etiologic mechanism in Addisonian pernicious anemia. Moreover with-

out invoking a food factor, it is difficult to find a ready explanation of the etiologic relationship to pernicious anemia of certain other types of macrocytic anemia which likewise respond to the administration of liver or stomach preparations. For these reasons, a repetition of certain of Greenspon's experiments was undertaken as well as a critical analysis of our former observations.

METHODS

The ten patients included in the present observations were all typical cases of Addisonian pernicious anemia. Each had gastric anacidity and an initial red blood cell count of less than 2 million per cubic millimeter. In distinguishing between negative and positive effects on blood formation, use was made of the reticulocyte response that occurs with positive effects on blood formation in suitable patients with pernicious anemia. For this purpose the reticulocyte response was used in all our former observations as well as in Greenspon's¹¹ experiments. A full discussion of the significance of such reticulocyte responses has recently been published.¹² The methods of blood counting and of reticulocyte staining were those employed in our previous studies. Unless otherwise specified, the normal human gastric juice (150 cc) was secreted by a healthy fasting individual after the injection of 0.5 mg of histamine, was then filtered through coarse cloth and placed in the icebox. The patients were maintained on the basal diets used in former observations, which contained no meat, eggs, liver or kidney. Chicken and fish were allowed once or twice a week. In cases 62, 63, 64, 66, 68 and 69 the basal diet was further restricted during the periods of observation and consisted of white bread, rice, macaroni, butter, potato, ice cream, tea, coffee and sugar.

OBSERVATIONS

Normal human gastric juice does not contain an "antipernicious anemia principle" effective on oral administration without contact with food (extrinsic) factor

As already pointed out, Greenspon¹¹ does not share this view but considers that gastric juice contains an "antipernicious anemia principle" effective when fed alone. He bases his belief partly on the following direct experimental evidence:

Two normal subjects, after having been given 60 grains (4 Gm) of calcium carbonate orally as a neutralizing agent, were injected with histamine in order to stimulate the flow of gastric juice. By means of a Rehfsuss tube the gastric juice was then aspirated and collected in a glass beaker containing ice and surrounded by ice. Care was taken immediately to adjust the reaction of the juice to neutrality and to maintain it so, until it was given to a pernicious anemia patient who had been selected for the testing of this material. The patient was fed about 250 cc of this cold neutralized gastric juice each day. It was given in the morning, on an empty stomach, and no food was allowed for the following four hours, in order to avoid the introduction of the so-called extrinsic factor.

In one patient with pernicious anemia and an initial red blood cell level of 2.6 million per cubic millimeter, Greenspon found a reticulocyte peak of 14 per cent on the seventh day of this regimen.

The technic of Greenspon's experiment was exactly followed in observations on patients 62, 63 and 64.¹³

2 Groen J. *Klinisch en experimenteel onderzoek over anæmie perniciosa en voorwaardelijke deficiënte Amsterdam Scheltema & Holkema's Boekhandel* 1935.

3 Hartfall St J and Wits L J. The Intrinsic Factor of Castle in Simple Achlorhydric Anæmia. *Guy's Hosp Rep* 83: 24 (Jan) 1933.

4 Helmer O M, Fouts P J and Zervas L G. Relationship of Intrinsic Factor to Hematopoietic Material in Concentrated Human Gastric Juice. *Am J M Sc* 188: 184 (Aug) 1934.

5 Middleton W S and Stiehm R H. The Influence of Gastric Juice on Erythropoiesis in Pernicious Anæmia. *Am J M Sc* 180: 809 (Dec) 1930.

6 Miller D K and Rhoads C P. The Presence in Egg White and in Rice Polishing Concentrate Low in Vitamin B₁₂ (C) of an Anti Pernicious Anæmia Principle. *New England J Med* 211: 921 (Nov 15) 1934.

7 Reimann F. Zur Frage der Steigerung der antianämischen Wirkung der Leber durch die Einwirkung von Magensaft auf Leber. *Klin Wchschr* 13: 413 (March 17) 1934.

8 Singer H. Eiertherapie der perniziösen Anämie. *Wien klin Wchschr* 45: 1063 (Aug 26) 1932.

9 Ungley C C and James G V. The Effect of Yeast and Wheat Embryo in Anæmias. II. The Nature of the Haemopoietic Factor in Yeast Effective in Pernicious Anæmia. *Quart. J Med* 27: 523 (Oct) 1934.

10 Wilkinson J F and Klein L. The Active Principle in Hog's Stomach Effective in Pernicious Anæmia. *Lancet* 1: 719 (April 2) 1932. The Relationship Between the Antianæmic Principles in Stomach and Liver. *Ibid* 2: 679 (Sept 16) 1933.

11 Greenspon E A. The Nature of the Antipernicious Anæmia Principle in Stomach. I. Method to Improve Stomach Preparations. *J A M A* 100: 66 (Jan 25) 1936.

12 Minot G R and Castle W B. The Interpretation of Reticulocyte Reactions. Their Value in Determining the Potency of Therapeutic Materials Especially in Pernicious Anæmia. *Lancet* 2: 319 (Aug 10) 1935.

13 The observation on Patient 64 was conducted by Dr C P Rhoads of the Rockefeller Hospital who has kindly allowed us to include his results.

TABLE 1—*Ancillary Results of the Administration to Patients with Pernicious Anemia of Neutralized Gastric Juice (Greenspon) and of Gastric Juice and Beef Muscle Administered Without Opportunity for Contact, Possible Effects of Gastric Juice (Before or After Incubation at 37.5 C for Two Hours) Administered with Beef Muscle, and of Gastric Juice Administered with Previously Inactivated Hog Stomach Mucosa*

First Period—Daily Administration of Various Substances Except as Indicated Below																															
		Gastric Juice 2.0 Cc Neutralized with Calcium Carbonate (Greenspon)						Gastric Juice 2.0 Cc Incubated 2 Hrs. Then to 7.0 with Beef Muscle 200 Gm				Hog Stomach Mucosa 200 Gm Incubated 48 Hrs. Then to 3.0 Then to 5.5				Gastric Juice 1.0 Cc Mixed with Billed Hog Stomach Mucosa 200 Gm				Beef Muscle 200 Gm and Gastric Juice 1.0 Cc. pa 7.0 on Alternate Days				Beef Muscle 200 Gm at 8 A.M. Gastric Juice 150 Cc. pa 7.0 at 8 P.M.				Beef Muscle 200 Gm at 10 A.M. Gastric Juice 100 Cc. pa 7.0 at 4 P.M.			
		Case 62		Case 63		Case 64		Case 65		Case 7a		Case 66		Case 67		Case 68		Case 69		Case 70											
Days of Treatment		Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes										
		Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent										
0		173	2.4	177	1.6	0.82	0.4	0.89	1.4	1.52	0.8	1.66	1.4	0.82	1.4	1.84	1.4	1.60	3.4	1.57	0.9										
2		194	1.9	170	1.7	1.0	0.59	1.4	1.56	2.8	1.97	1.4	0.74	1.6	1.57	1.2	1.33	3.2	1.90	3											
4		1.81	0.6	170	1.6	0.94	0.2	0.85	3.2	1.49	2.0	1.98	3.4	0.70	1.0	1.80	0.4	1.44	2.8	1.64	2.2										
6		175	0.6	1.57	0.4	0.8	1.18	13.5	1.41	2.4	1.93	2.6	0.72	3.1	1.84	1.2	1.49	3.8	1.94	3.0											
8		173	0.3	1.66	0.4	0.98	0.6	1.26	14.5	1.63	2.2	2.18	2.6	0.81	13.2	1.68	1.0	1.70	4.0	1.99	2.8										
10		167	0.4	1.55	1.0	0.71	2.1	1.45	12.8	1.53	1.6	1.93	0.9	1.10	29.0	1.64	1.2	1.42	2.8	2.01	4.0										
12						0.97	1.0	1.67	11.0	1.33	1.2	2.04	2.0			1.78	1.4	1.34	1.4	2.16	9.0										
14							1.6*			1.41	0.8									2.45	1.6										

Second Period—Daily Administration of Various Substances Except as Indicated Below																													
		Gastric Juice 2.0 Cc Incubated 1 Hr. Then to 7.0 with Beef Muscle 200 Gm				Gastric Juice 2.0 Cc Incubated 2 Hrs. Then to 7.0 with Beef Muscle 200 Gm				Gastric Juice 2.0 Cc Continued as in First Period				Liver Extract from 600 Gm Liver				Gastric Juice 1.0 Cc Mixed with Billed Hog Stomach Mucosa 200 Gm				Gastric Juice 1.0 Cc. pa 7.0 and Beef Muscle 200 Gm Together on Alternate Days				Gastric Juice 1.0 Cc. pa 7.0 and Beef Muscle 200 Gm Together			
		Case 62		Case 63		Case 64		Case 65		Case 7a		Case 66		Case 67		Case 68		Case 69		Case 70									
Days of Treatment		Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes								
		Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent								
2		172	0.6	1.47	0.6	1.28	1.9	1.74	6.4	1.07	0.6	2.04	1.0	1.31	35.9	1.41	1.6	1.46	9.0										
4		177	0.2	1.34	1.2	1.39	1.0	1.52	4.4	1.17	5.4	2.04	0.2	1.35	18.2	1.35	1.0	1.43	2.8										
6		1.84	0.9	1.44	2.1	0.8	1.0	1.74	8.7		18.2	2.13	0.2	1.45	5.4	1.2	4.0	1.47	7.1										
8		174	2.0	1.43	5.6	1.42	1.1	1.88	13.9	1.97	20.4	2.07	4.2	1.69	3.1	1.33	5.0	1.55	8.4										
10		194	9.3	1.61	9.5	1.09	1.5	2.32	15.9	2.51	26.0	2.17	7.5	1.55	4.3	1.30	5.0	1.2	26.6										
12				1.75	12.3		1.3	2.47	5.6	2.64	5.2	2.04	3.8			1.55	6.5	1.68	13.0										
14				1.95	8.4	1.10	0.8					2.23	2.9																
(Nonprotein nitrogen 7.8 mg.)																													

Third Period—Daily Administration of Various Substances as Indicated Below																					
		Gastric Juice 2.0 Cc pa 7.0 with Beef Muscle 200 Gm				Ventriculin 10 Gm				No Therapy				No Therapy				No Therapy			
		Case 62		Case 63		Case 64		Case 65		Case 7a		Case 66		Case 67		Case 68		Case 69		Case 70	
Days of Treatment		Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes	Red Blood Cells	Reticulo-cytes
		Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent	Mill. per Hons.	per Cent
2		2.33	16.1	1.89	4.4		0.9														
4		2.67	7.1	1.75	1.8	0.91	5.0														
6		2.10	2.9	1.69	2.2	0.97	7.0														
8				1.83	6.8		10.1														
10				1.80	14.5	0.74	14.8														
12				2.07	10.6		10.4														
14				1.98	9.0	0.67	7.4														
16				2.16	3.0	0.83	5.4														
(10 Days Later)																					

The immediately succeeding period of observation in cases 62, 63, 64 and 66 demonstrates the ability of each patient to react positively. Patients 62 and 63 were given a meal containing 200 Gm of beef muscle simultaneously with 250 cc of gastric juice unneutralized until immediately before administration at noon each day. Patient 64 responded to the daily administration of 10 Gm of ventriculin, as did patient 66 to the administration of a mixture of gastric juice and boiled hog stomach mucosa. The details of the blood counts are presented in table 1. A consideration of the nature of the diet given Greenspon's patient suggests the probable explanation for his isolated positive result with neutralized gastric juice fed alone. Since meat,^{1b} eggs⁸ and whole grain cereals¹ have been shown to yield positive results when administered with gastric juice to patients with pernicious anemia, patients 62, 63, 64 and 66 were given none of these foods in the special basal diet, specified under methods. Dr Greenspon has kindly informed us that, on the contrary, the only dietary restriction imposed on his patient was the omission of liver and kidney. The patient may thus have received meat, eggs or whole grain cereals in the hospital diet.

Moreover, if such substances were present in the diet used by Greenspon, the administration of the gastric juice to the fasting patient only four hours before the succeeding meal is not a precaution necessarily adequate to prevent effective contact between gastric juice and food (extrinsic) factor. This is shown by the observations on patient 70. This patient received each morning 200 Gm of beef muscle. Six hours later he was given 100 cc of gastric juice collected as usual in our experiments and neutralized only immediately before administration. As will be seen from the data presented in table 1, a reticulocyte peak of 9 per cent resulted on the twelfth day of this regimen. The initial level of the red blood cells was 1.57, and on the fourteenth day the count reached 2.45 million per cubic millimeter. Clinical improvement was obvious. It is therefore clear that effective interaction can occur between extrinsic and intrinsic factors given six hours apart and so may have occurred in the four hour separation of the gastric juice from the next meal employed by Greenspon.

Furthermore, since the gastric juice used in this particular experiment produced positive responses in conjunction with beef muscle, it is clear that the special precautions advocated by Greenspon to prevent peptic activity are not essential to the preservation of the intrinsic factor. Additional evidence for this is obtained in the positive responses occurring with mixtures of gastric juice and extrinsic factor in the final periods in cases 62, 63, 65, 66, 68 and 69 and in the first period in case 67 (table 1). In all these instances gastric juice was collected as in our former observations, with no attempt to maintain its neutrality and so to prevent peptic activity.

The activity of desiccated hog stomach mucosa is due to the presence of both intrinsic and extrinsic factors.

We^{1c} have observed in a few instances that positive effects on blood formation in pernicious anemia were obtained from the daily administration of as little as 30 Gm of fresh hog stomach mucosa. Greenspon¹¹ states that "since Castle's theory is founded on the belief that the addition of beef or some other source of extrinsic factor is necessary for the production of

the antipernicious anemia principle, these positive results with gastric mucosa alone require explanation." Now, since the mucosa is obviously not entirely composed of gastric juice, it is clear that something besides intrinsic factor is present in it. If that something else were a source of extrinsic factor, the possibility of an effective interaction occurring could not be excluded. Greenspon's argument that since gastric mucosa alone is effective, normal human gastric juice alone must also be effective is therefore not logical.

The following observation demonstrates that by a procedure known to destroy intrinsic factor in normal human gastric juice, hog stomach mucosa is rendered inert. To patient 7a was given daily 200 Gm of hog stomach mucosa which had been incubated in the presence of hydrochloric acid and native pepsin at p_H 2.5 to 3.5 for at least forty-eight hours at 37.5 C. No evidence of increased blood formation was observed during a first period of twelve days, although the patient subsequently responded in a second period to the daily oral administration of liver extract-Lilly (N N R) derived from 600 Gm of liver (table 1).

The following observations show that extrinsic factor is present in hog stomach mucosa. About 5 Kg of hog stomach was boiled for two hours on a water bath, then cooled, finely minced and together with the liquor obtained, 2,500 cc of water, 90 Gm of pepsin, and sufficient concentrated hydrochloric acid to maintain an acidity of less than p_H 2.5, was incubated at 37.5 C for seventy-two hours. At the end of that time the liquefied material was concentrated by vacuum distillation until 100 Gm was equivalent to 200 Gm of original mucosa. In this process there were thus employed two procedures known to destroy the activity of hog stomach mucosa,^{1c} first boiling for at least five minutes and, second, digestion with pepsin and hydrochloric acid for forty-eight hours at 37.5 C.

To patient 66 in the second period and to patient 67 in the first period were given daily 100 Gm of this inactivated hog stomach mucosa concentrate and 150 cc of gastric juice immediately after admixture and neutralization with concentrated sodium hydroxide. As will be seen in table 1, patient 66 responded moderately with a reticulocyte peak of 7.5 per cent on the tenth day of the regimen. At this time the blood nonprotein nitrogen, which had been slightly elevated throughout, reached 73.8 mg per hundred cubic centimeters, and the observation was discontinued. Patient 67 responded to a similar regimen with a reticulocyte peak of 35.9 per cent on the twelfth day. From an initial level of 0.82 million the red blood cells increased to 1.85 million per cubic millimeter on the twentieth day. Clinical improvement was correspondingly striking. Hog stomach mucosa therefore contains extrinsic factor and the probable basis for the activity of this material or, as suggested before, of whole hog stomach,¹⁸ depends on the presence of both a thermostable (extrinsic) factor and a thermolabile (intrinsic) factor.

Incubation of normal human gastric juice for two hours at 37.5 C inactivates only a portion of the intrinsic factor.

Greenspon¹¹ states that the well known hematopoietic activity of ventriculin (desiccated hog stomach) is completely destroyed in the presence of pepsin and hydrochloric acid by incubation at 38 C for two hours.

¹ Castle, W. B. The Etiology of Pernicious Anemia and Related Macrocytic Anemias. *Ann Int Med* 7: 2 (July) 1913.

¹⁸ (a) Castle, Townsend and Heath. (b) Sturgis, C. C. and Isaacs, Raphael. Treatment of Pernicious Anemia with Desiccated Defatted Stomach. *Am J M Sc* 180: 597 (Nov) 1930.

or longer. The reaction of the incubated mixture was acid to congo red. From this observation he infers that in our experiments in which acid and pepsin containing gastric juice was incubated for two hours at 37.5 C its "antipernicious anemia principle" was similarly destroyed. He presents, however, no direct evidence for this conclusion from observations with incubated gastric juice.

That the incubation of normal human gastric juice under the conditions of former observations^{1b} destroys only a portion of its content of intrinsic factor is shown by the positive effects on blood formation in the second period in case 63 and the first period in case 65 (table 1). Two hundred and fifty cubic centimeters of normal human gastric juice containing active pepsin, as shown by Mett's tubes, and having a natural p_H of about 1.5, was incubated for two hours at 37.5 C. Immediately thereafter the gastric juice was neutralized and given daily to each patient coincidentally with a meal containing 200 Gm of beef muscle. In case 62 the gastric juice was incubated for only one hour and a similar positive result was observed in the second period.

Since we^{1b} had previously shown, however, that the incubation of normal human gastric juice for three days at 40 C completely abolished its content of intrinsic factor, it seemed very likely that some destruction of this component would be produced by incubation for two hours at 37.5 C. Accordingly, in the third period in case 63 and in the second period in case 65 the conditions of the preceding period were exactly reproduced except that the gastric juice was not incubated but was given each day immediately after neutralization and coincidentally with a meal containing 200 Gm of beef muscle. In the third period in case 63 there was a second reticulocyte response reaching 14.5 per cent on the tenth day, and in case 65 a second peak of reticulocytes of 15.9 per cent was attained on the tenth day of this regimen. The occurrence of such second rises of reticulocytes indicates that the material given in these periods was more effective than that given in the preceding periods.¹² Greenspon's belief in the destructive action of peptic hydrolysis on an "antipernicious anemia principle" is thus sustained in that a two hour period of incubation is shown to be detrimental to intrinsic factor. However, since removal of pepsin without change in other properties of the gastric juice was not undertaken, our observations clearly do not permit the further definition of the nature of the destructive process as necessarily peptic hydrolysis.

Beef muscle and gastric juice administered without opportunity for contact are wholly ineffective.

Since the intrinsic factor of normal human gastric juice is partially destroyed by incubation for two hours at 37.5 C at p_H 1.5 the completely negative results of the observations^{1b} in the control periods in cases 13, 15 and 17 may be questioned. In these observations such incubated gastric juice was given to the patient each day sufficiently long before the beef muscle as presumably to diminish greatly any opportunity for contact between these substances within the alimentary tract.

A repetition of these observations was undertaken without preliminary incubation of the gastric juice. During the first period in case 69 200 Gm of beef muscle was given to the patient at 8 o'clock in the

morning. Twelve hours later 150 cc of gastric juice was neutralized and immediately given. This regimen was repeated daily for twelve days without detectable effect on blood production, as shown in table 1. In the immediately succeeding second period, however, when each day similar quantities of neutral gastric juice and beef muscle were given together, a reticulocyte peak of 20.6 per cent was reached on the tenth day and the red blood cells increased from an initial level of 1.34 to 1.95 million per cubic millimeter on the sixteenth day. In order that the amount of both beef muscle and gastric juice administered in each period of twelve days might be the same, these substances were not given after the twelfth day of the second period.

To patient 68 were given on the odd numbered days of the first period 300 Gm of beef muscle and on the even numbered days 150 cc of neutral gastric juice. In all, six administrations of each substance were made on alternate days during the twelve days of this first period. No detectable effect on blood production was observed. During the immediately succeeding period of twelve days 300 Gm of beef muscle and 150 cc of gastric juice neutralized immediately before administration were given together every other day for six such administrations. A moderate effect on blood production occurred. The reticulocytes reached a peak of 7.4 per cent on the sixteenth day and the red blood cells did not increase. This relatively slight effect on reticulocyte production is probably explained by the presence of cystitis with fever complicating the patient's condition and by the fact that since the material was administered only on alternate days the amount given was spread over twice as long a period as in observations in which daily administration was practiced.

The observations on patients 68 and 69 demonstrate that the conclusions reached on the basis of former observations^{1b} on patients 13, 15 and 17 were correct, namely, if beef muscle and gastric juice are administered without opportunity for contact, they are not effective. It is obvious, therefore, that the activity of mixtures of beef muscle and gastric juice cannot be due to the simple addition of two subthreshold substances but requires an interaction between them.

Former experiments apparently demonstrating the absence of extrinsic factor from certain substances are not necessarily valid.

Observations apparently demonstrating the negative effects of gastric juice incubated with various substances were made in case 5 (cornstarch),^{1a} case 19 (washed casein),^{1b} case 24 (beef muscle protein)^{1c} case 27 (wheat gluten), case 51b (animal nucleic acid), cases 52, 53 and 54 (spleen pulp), cases 58 and 59 (nucleoprotein) and cases 59a, 60 and 61 (yeast nucleic acid).^{1e} Since incubation of 250 cc of gastric juice for two hours at 37.5 C in the presence of native pepsin and hydrochloric acid at a reaction of p_H 1.5 detectably diminishes its content of intrinsic factor, the apparently negative results of these former observations need reconsideration.

In table 2 are summarized the amounts of gastric juice, the nature of the substrate, and the reaction and duration of the incubation period in the foregoing cases. Patient 5 was given daily the entire incubated gastric contents of a normal man removed one hour after the ingestion of a meal of 300 Gm of cornstarch. Since the incubation period in the observation on this patient lasted six hours at a reaction of p_H 1.5 to 2, the negative result cannot be accepted. It is probable, however, from the nature of the basal diet used in all our ob-

^{1c} Case 5—W. F. Townsend, W. C. and Heath, C. W. Further Observations on the Etiological Relation of Amlia Cystica to Pernicious Anemia. *J. Clin. Invest.* 15: 209 (Aug.) 1936.

vations that refined carbohydrate does not contain extrinsic factor. The negative result of observations on patient 19, who was given daily 50 Gm of washed casein (A. H. Thomas Company) incubated with 300 cc. of gastric juice from three to five hours at p_H 2.5-3.5, likewise cannot be accepted because of the prolonged incubation period.

The negative results with spleen pulp and gastric juice in cases 53 and 54 we now believe cannot be accepted, owing to the fact that the observations were made on patients in another city to which the material had to be transported, subject to delay. In former unpublished observations with incubated mixtures of beef muscle and gastric juice known to be fully effective under usual conditions, negative results were obtained when the material was so transported. In the first periods in cases 50 and 51, and in the second period in case 58, positive results were obtained from the daily administration of 50 Gm or more of spleen pulp or a subfraction after incubation with from 50 to 75 cc of gastric juice for two hours at p_H 7. Therefore, the negative result in patient 52, who received 100 Gm of spleen pulp incubated for two hours with 75 cc of gastric juice at p_H 7, seems to be clear cut. It is thus probable that, as was formerly stated, the divergent results of these observations with spleen pulp are due to variations in the content of extrinsic factor of the spleen.

In cases 24, 27, 52, 58, 59a and 60, the incubation period did not exceed two hours. Assuming the correctness of Greenspon's belief that peptic activity is responsible for the inactivation of gastric juice, the conditions (table 2) of none of these incubation procedures could have been as favorable for destruction of the intrinsic factor as those obtaining during incubation of gastric juice alone for two hours. In the latter case the reaction (p_H 1.5) was almost optimal for peptic hydrolysis and there was no substrate present potentially capable of adsorbing pepsin and so affording protection for the intrinsic factor.

In the observations in cases 52, 59, 59a and 60 in which only 75 cc of gastric juice was employed, the reaction of the incubated mixture was p_H 6 to 7. In cases 51b and 61 only 50 cc of gastric juice was incubated for four hours at p_H 7 with the substrates. It is possible that, although incubation of 250 cc of gastric juice for two hours under optimal conditions for peptic activity only partially destroyed its content of intrinsic factor, the inactivation of a smaller quantity of gastric juice would be sufficiently great to produce the negative results observed. It is also possible that the temperature alone and not the peptic hydrolysis suggested by Greenspon is responsible for the partial inactivation of the intrinsic factor observed. Helmer Fouts and Zerfas,⁴ however have obtained moderately positive effects from the daily administration of as little as 10 and 25 cc respectively of gastric juice incubated for four hours at 47°C with liver extract-Lilly (N. N. R.) derived from 100 Gm of liver. The daily administration of such an amount of that liver extract alone is essentially ineffective. Because of these facts it does not seem probable that the reduction of the amounts of gastric juice employed in some of these observations or the incubation in some instances for as long as four hours at p_H 7 could have been responsible for the negative results. Nevertheless because of the variability of response to oral administration among patients with pernicious anemia negative results

unless obtained under optimal conditions for interaction between intrinsic and extrinsic factors cannot be accepted as confidently as positive responses. For this reason the negative observations with washed casein and with certain other substances are being repeated without preliminary incubation.

Unfortunately, criticism may also be justified in respect to the negative results of others who have likewise incubated certain substances for over two hours with acid gastric juice. Thus Diehl and Kühnau²⁰ and Groen² incubated lactoflavin^{20a} for three and four hours respectively with gastric juice and obtained no effect on blood production in pernicious anemia. The negative result obtained by Wills and Naish²¹ with an extract of egg white incubated with gastric juice for two hours, and confirmed by Groen² with egg white after a four hour incubation period, contrasts with the positive result reported by Miller and Rhoads⁹ after an incubation period of only one hour. On the other hand those substances giving negative results in patients with tropical macrocytic anemia may safely be accepted as lacking in extrinsic factor provided the

TABLE 2—Conditions During the Incubation at 37.5°C of Mixtures of Normal Human Gastric Juice with Various Substrates Administered with Negative Results to Patients with Pernicious Anemia

Case Number and Reference of Previous Report	Gastric Juice Cc.	Substrate		Incubation Period	
		Nature	Amount Gm	Duration Hours	Reaction p_H
5 ^{1a}	200	Cornstarch	300	6	1.5-2.0
19 ¹¹	300	Washed casein	50	3-5	2.5-3.5
24 ^{1c}	150	Beef muscle protein	*	2	2.0
27 ^{1c}	150	Wheat gluten flour	100	2	3.0
52 ^{1e}	75	Spleen pulp	100	2	6.0-7.0
53 ¹	50	Spleen pulp	50	0	7.0
54 ^{1e}	50	Spleen pulp	50	0	7.0
58 ^{1e}	100	Nucleoprotein	5	2	3.0-4.0
59 ^{1e}	75	Nucleoprotein	5	2	6.0
51b ^{1e}	50	Animal nucleic acid	5	4	7.0
59a ^{1e}	75	Yeast nucleic acid	10	2	6.0
60 ^{1e}	75	Yeast nucleic acid	10	2	6.0
61 ^{1e}	50	Yeast nucleic acid	5	4	7.0

* Derived from 200 Gm of beef muscle.

positive effects with other substances are due to the natural presence of intrinsic factor in the gastric juice of these patients.²² Thus, Wills²³ found that dried yeast, a watery extract of yeast, a vitamin B₂ preparation derived from egg white, and a preparation of vitamins B₁ and B₄ adsorbed on acid clay, in contrast to various preparations of autolyzed yeast (marmite), had no blood-forming activity in tropical macrocytic anemia. In confirmation of this the Lassens²⁴ found that pressed top yeast and watery extracts of such yeast before or after autoclaving for one hour at 25 atmospheres did not lead to increased blood production in pernicious anemia after incubation with gastric juice for two hours.

20 Diehl F and Kühnau J. Ist Vitamin B der therapeutisch wirkende, ausserer Faktor beim Morbus Biermer? Deutsches Arch f Klin Med 176: 149 (Dec. 12) 1933.

20a We have, however now entirely confirmed these negative results by giving a mixture of 150 cc of neutralized gastric juice and 20 mg of lactoflavin daily for five days without preliminary incubation. We are indebted to Vitab Products Inc. for supplying the lactoflavin.

21 Wills Lucy and Naish Alice. A Case of Pernicious Anaemia Treated with Vitamin B₂ from Egg White. Lancet 1: 1286 (June 17) 1933.

22 Strauss and Castle.¹⁸ Ungley and James.⁹

23 Wills Lucy. Studies in Pernicious Anaemia of Pregnancy. VI Tropical Macrocytic Anaemia as a Deficiency Disease with Special Reference to the Vitamin B Complex. Indian J Med Research 21: 669 (April) 1934.

24 Lassens H C A and Lassens H K. Yeast or Vitamin B as Extrinsic Factor in Treatment of Pernicious Anemia. Am J Med Sc 188: 461 (Oct.) 1934.

COMMENT

When it is shown that for the secretion of the normal stomach to be effective in pernicious anemia a food factor is essential, the demonstration that a disturbance of the stomach is a primary factor in the immediate causation of the disease becomes possible on purely experimental grounds. Whether the fact of failure of the secretion of the stomach in pernicious anemia were known or not a repetition of the observations which we have conducted with beef muscle and gastric juice would, we believe, lead to the conclusions that we have reached.

Briefly, these experiments have shown that in pernicious anemia the oral administration of either beef muscle or gastric juice alone is without effect. The oral administration of the gastric contents of a normal subject removed after the ingestion of a meal of beef muscle¹² or the oral administration of mixtures of gastric juice with beef muscle¹³ eggs,⁸ autolyzed yeast³⁷ wheat germ¹⁶ rice polishings³⁸ or tomato extract² has been shown to produce increased blood formation in pernicious anemia. A similar process would clearly take place in the normal subject in the natural course of the digestion of certain foods.

Our conception of the experimentally demonstrable factors normally involved in the production of the substance that is deficient in the liver of patients with pernicious³⁵ and related macrocytic anemias³⁶ is represented by the schematic formula

$$\frac{F \times G}{I} = L \quad E$$

Here *F* stands for food (extrinsic) factor *G* for gastric (intrinsic) factor and *I* for intestinal impermeability or any defect causing malabsorption or destruction of those substances or a product of their effective interaction. *L E* stands for "liver extract," the independently effective thermostable factor found in mammalian liver, kidney and certain other organs. Probably in none of the anemias referred to is any factor on the left of the equation completely normal and in every instance there is a variable participation of defects of one or both of the factors in the numerator³⁹ or some increase of the denominator value⁴⁰. Any or all such changes from the normal will, however, result in a decrease of "liver extract" which if sufficiently great, may allow the development of a macrocytic anemia which will respond to the parenteral administration of liver extract derived from the liver of a normal animal.

If the dominant defect is of food (extrinsic) factor, the anemia will respond both to orally administered extrinsic factor and to liver extract (e.g., macrocytic anemia of pregnancy in the tropics⁴¹ and elsewhere^{39b} or of certain cases of sprue³⁶ and idiopathic steatorrhea⁴²). The presence of some intrinsic factor in the stomach probably explains the occurrence of "spontaneous remissions" in certain cases of pernicious

anemia⁴³ as well as the usual recovery following delivery of patients with the pernicious anemia of pregnancy^{39b}. Likewise the partial success of former methods of treatment with high protein diets in both pernicious anemia¹⁴ and sprue³⁶ was probably due to a similar effect. On the other hand, the concept of a defect of an independently active antipernicious anemia principle secreted by the stomach, as proposed by Morris²⁵ and by Greenspon,¹¹ does not satisfactorily explain the immediate etiologic mechanism of those instances of macrocytic anemia in which intrinsic factor is demonstrably present in the gastric contents³⁶. If the dominant defect is of gastric (intrinsic) factor, the anemia will not respond to orally administered extrinsic factor unless gastric juice is given simultaneously but will respond to liver extract administered orally or parenterally (e.g., Addisonian pernicious anemia).

The existence of an essential preliminary reaction between food and gastric juice does not, however, preclude the possibility of defects of other subsequent and essential reactions within or without the alimentary tract. If intestinal impermeability is sufficiently increased, the patient will not respond normally to mixtures of extrinsic and intrinsic factor or to stomach or liver preparations given by mouth but will respond to parenterally administered liver extract (e.g., macrocytic anemia of chronic sprue³⁶ or of intestinal stenoses or short circuits⁴⁴). In theory at least, failure or inhibition of any essential link in the further metabolism within the body will likewise diminish the supply of liver extract available to the bone marrow⁴⁵. It is certainly clear that infections¹² may have an inhibitory effect on the action of liver extract in pernicious anemia. This concept of the etiologic relationships between pernicious anemia and other types of macrocytic anemia which likewise respond to the parenteral administration of liver extract has been fully discussed elsewhere⁴⁶.

CONCLUSIONS

The following observations on patients with pernicious anemia fail to sustain the conclusions of Greenspon:

1 Normal human gastric juice does not contain, on oral administration, an "antipernicious anemia principle" effective without contact with food (extrinsic) factor.

2 Hog stomach mucosa contains both a thermostable (extrinsic) factor and a thermolabile (intrinsic) factor presumably responsible for the activity of such mucosa and of whole desiccated hog stomach.

3 Incubation of normal human gastric juice for two hours at 37.5°C. in the presence of native pepsin and hydrochloric acid inactivates only a portion of its content of intrinsic factor.

4 Beef muscle (extrinsic factor) and gastric juice (intrinsic factor) administered without opportunity for contact are not effective in pernicious anemia.

37 Strauss and Castle.¹ Green.²

8 Strauss and Castle.¹ Miller and Rhoads.⁴

9 (a) Castle, W. B. The Etiology of Pernicious and Related Macrocytic Anemia. *Science* 82: 159 (Aug. 23) 1933. (b) Strauss, M. B. and Castle, W. B. Studies of Anemia in Pregnancy. III. The Etiologic Relationship of Gastric Secretory Defects and Dietary Deficiency to the Hypochromic and Macrocytic (Pernicious) Anemias of Pregnancy and the Treatment of These Conditions. *Am. J. M. Sc.* 185: 539 (April) 1933. (c) Goldhamer, S. M. The Presence of the Intrinsic Factor of Castle in the Gastric Juice of Patients with Pernicious Anemia. *Am. J. M. Sc.* 191: 50 (March) 1936.

10 Castle, W. B. and Strauss, M. B. Castle, Rhoads, Law and Payne.⁴⁸ 41 Wills. Treatment of Pernicious Anemia of Pregnancy and Trichin Anemia, with Special Reference to Yeast Extract as a Curative Agent. *Brit. M. J.* 1: 1059 (June 20) 1931.

42 Vaughan, J. M., and Hunter, Donald. The Treatment by Marmite (Megaloth) of Pernicious Anemia Occurring in Idiopathic Steatorrhea (Chronic Diarrhea). *Lancet* 1: 829 (April 16) 1932.

43 Castle, Heath and Strauss.¹⁴ Goldhamer.²⁶

44 Castle, Heath and Strauss.¹¹ Schlesinger, Annemarie. Nachweis des Antiperniciosa-Prinzips im Magen saft einer Patientin mit pernizios anamischem Blutbild bei Duodenalstenose. *Klin. Wchnschr.* 12: 298 (Feb. 25) 1933. Strauss, M. B. The Role of the Gastro-Intestinal Tract in Conditioning Deficiency Disease. The Significance of Digestion and Absorption in Pernicious Anemia, Pellagra and Alcoholic and Other Forms of Polyneuritis. *J. A. M. A.* 103: 1 (July 7) 1934.

45 Castle, Heath and Strauss.¹⁴ Wintrobe, M. M. and Shumaker, H. S. Jr. The Occurrence of Macrocytic Anemia in Association with Disorder of the Liver. *Bull. Johns Hopkins Ho.* p. 52: 387 (June) 1933. Goldhamer, S. M. Liver Extract Therapy in Cirrhosis of the Liver. Relation of Liver Dysfunction to Non-tolerance of Antianemic Substance in Producing a Blood Picture Resembling Pernicious Anemia in a Patient Secreting Free Hydrochloric Acid. *Arch. Int. Med.* 73: 54 (Jan.) 1911.

46 Castle, Heath and Strauss.¹⁴ Strauss and Castle.¹ Castle.¹ Strauss and Castle.²⁶

Greenspon's recent experiments have led to the following modified conclusions in respect to former observations

1 The negative results of the administration of substances after incubation with gastric juice for longer periods than two hours at 37.5 C at an acid reaction cannot be accepted

2 Lack of extrinsic factor in substances so incubated with gastric juice is not established by negative results

3 Preliminary incubations should not be employed in testing the blood-forming activity in pernicious anemia of mixtures of gastric juice and various substrates

Clinical Notes, Suggestions and New Instruments

TRIGGER FINGER IN CHILDREN

S A JAHSS M D NEW YORK

Trigger finger, while fairly common in the adult, is rather rare in children. The digit involved is always the thumb, whereas in the adult any finger may be the seat of this trouble, usually the third or fourth finger. Because of its rarity, I have never yet seen a case referred to me that had previously been diagnosed correctly. Most often the diagnosis has been "congenital contraction" of the thumb. The reason for this is quite obvious when one hears the almost stereotyped and meager history given by the mother to the doctor: "My child holds the end of the thumb bent and cannot straighten it. If I try to straighten it, the child cries and pulls the hand away." In fact, such was the history when I saw my first case. In six of the nine cases to be reported that was the only history given. Not one of the mothers knew exactly how long this state of affairs had been present, one said a few weeks, another a few months, while most of them claimed that it must have been present since birth. This last group was only rationalizing. In one case the mother was able to "open" the finger accompanied by a snapping sound. It remained open until the child actively flexed the thumb and then it went back into the fixed bent position. The child herself could not voluntarily "open" the thumb.

An understanding of the pathology is necessary for a clear conception of the symptoms. There is present a thickening of the tendon of the flexor longus pollicis near the base of the

locking of the tendon begins only after the distal phalanx has been flexed at least 60 to 75 degrees, the range of released flexion is small, as the angle of greatest flexion at the interphalangeal joint is 90 degrees and the tip of the thumb describes an arc of only 15 to 30 degrees. Now when extension is attempted the same snapping phenomenon takes place. In order to extend, the thickened tendon must be forced through the narrowed opening by the extensor longus pollicis. It is this sudden rapid and snapping flexion and extension of the distal phalanx that has given this condition the name of trigger finger or snapping thumb. The length of the sudden extension is greater as the tip of the thumb describes an arc of from 60 to 75 degrees. There are therefore always two snapping motions of the thumb, one on flexion and one on extension. On palpation, one can feel this snapping quite easily.

There finally comes a time when the extensor muscle is unable to overcome the mechanical obstruction and the terminal phalanx remains locked in the flexed position.

Prolonged effort on the part of the patient to extend this terminal phalanx may lead to a stretching of the anterior ligament at the metacarpophalangeal joint, with a resultant hyperextension of this joint, which with the flexion of the interphalangeal joint, looks like the picture one sees in cases of congenital contraction. But congenital contractions usually involve the other fingers, with the flexion at the proximal interphalangeal joint and the extension at the distal interphalangeal joint.



A typical case. Distal phalanx locked in flexion. The angle of greatest extension is 150 degrees. There is 35 degrees of hyperextension between the proximal phalanx and the metacarpal. The ink line at the base of the thumb outlines the bulge immediately anterior which is the bulbous portion of the flexor longus pollicis.

Ten Cases of Trigger Finger

Patient	Sex	Age	Right	Left	Bilateral
A. A.	♂	16 mo	1		
A. D.	♂	1 1/2			1
M. F.	♀	2	1		
W. S.	♂	6		1	
D. K.	♂	2		1	
G. M.	♂	1 1/2			1
S. G.	♂	2		1	
C. S.	♂	2			1
H. G.	♂	2 1/2 mo	1		
C. F.	♂	2	1		

proximal phalanx. This thickening is usually fusiform but may be nodular. The sheath of the tendon opposite the metacarpophalangeal articulation is not elastic owing to the presence of the palmar fascia, and therefore offers resistance to the free excursion of the bulbous portion of the tendon on active flexion and extension. This constant irritation of both tendon and sheath leads to an actual thickening of the sheath at this point with a concomitant narrowing of the lumen. The tendon also becomes more bulbous until such a time when the thickened tendon is wider than the opening in the sheath. Now, as the distal phalanx is flexed marked effort of the flexor longus pollicis is necessary to pull the widened tendon through the narrow opening. When it does pass through it does so suddenly that the thumb snaps shut. Since the

On palpation over the palmar aspect of the head of the metacarpal, in addition to feeling the snapping, one can also feel the thickened part of the tendon making its longitudinal excursion. This thickening is felt as a hard nodular mass and is fairly tender. It is easily palpable, as the head of the metacarpal is quite prominent because of hyperextension at this joint.

When the distal phalanx is locked in flexion the movement of this mass is hard to elicit, as there is only about 15 to 30 degrees of active motion possible at this time and only active flexion and extension will produce this excursion. When passive motion is substituted instead it tends only to relax and make taut that part of the tendon which is distal to the obstruction and which in itself is normal.

This series comprises ten operative cases. I say operative, because fifteen cases were actually seen but five of the patients refused to enter the hospital. Since the absolute diagnosis could be corroborated only by operation, the cases in which operation was not performed were not included in this report.

The age incidence ranged from 3½ months to 15 years. The history given by the mother of the 15 year old girl was that "she has had this condition since birth."

Six of the patients were females and four were males.

Seven cases were unilateral, of which four were right and three left. In three cases both thumbs were involved.

There is only one treatment and that is surgical. It consists of dividing the thickened and constricted sheath longitudinally until the fusiform swelling of the tendon moves freely on passive motion. In closing the wound, only the skin is sutured. The child is encouraged to move the thumb immediately. The thickened sheath usually cuts like gristle. A section taken from the sheath of one of these cases for pathologic examination shows hyalinized connective tissue with fibrous villi. The first patient was operated on nine years ago and the last one in August 1936.

C. P., a girl, aged 2 years, had the right thumb involved. The history was as typically vague as in the other nine cases. The operation was performed on August 3. Active motion of the distal phalanx is painless and normal in range.

SUMMARY

Trigger finger in children is an uncommon condition and is most often confused with congenital contraction of the thumb. It is amenable only to operative treatment, as a mechanical factor must be overcome.

No recurrences have taken place.

23 West Seventy-Third Street

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF LOCAL ANESTHETICS

JOHN S. LUNDY, MD

ROCHESTER, MINN.

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—Ed.

Local anesthetics depend for their success primarily on the skill with which they are used,¹ although the relative nontoxicity of such agents and any idiosyncrasy of the patient to them are also important factors. When idiosyncrasy is suspected, one may test the patient's skin by the patch method and thereby obtain valuable information; other tests have been devised, but not one is safer than the patch test. The skill of the administrator depends on previous training and on the opportunity to keep in practice. For that reason no one is skilful in all methods of local anesthesia, and it seems wise to recommend that satisfactory methods already employed should not be forsaken for others that are new and may seem promising but which obviously will seldom be used.

For purposes of brevity, and because they can be found readily elsewhere, descriptions of the technic of such various methods of regional anesthesia as abdominal block,² brachial plexus block (supraclavicular

route³), cervical block,⁴ sacral block⁵ held block,⁶ infiltration,⁷ spinal anesthesia,⁸ peridural anesthesia,⁹ para vertebral block,^{10a} and block of cranial nerves for operations on the head¹¹ and nerve blocks for orthopedic operations,¹⁰ for dental operations,¹² in obstetrics¹³ and for diagnosis,¹⁴ prognosis and therapeutics, are not included here, the page numbers in the books referred to being appended to references in the bibliography.¹⁵

Infiltration of tissue to be incised is the most successful method for common use. Precautions should be taken, however, to avoid using the wrong drug or using it in the wrong concentration; further, the use of vasoconstrictors in injections of the digits, in the presence of hypertension, or when patients are suffering from exophthalmic goiter, should be avoided. Trauma from the needle with which the solution is injected should be held to the minimum. Some of the alleged poor healing of wounds is not so much due to the agent used, except when the drug is used in too concentrated a form, as to the trauma caused during introduction of the needle into the tissue.

The dosage of local anesthetic agents employed should be such that there will be no question as to its safety. Since the dose of local anesthetic agents varies, several factors may be involved in deciding on the correct dosage. This is illustrated in my remarks on procaine hydrochloride.

In 1924 a committee appointed by the American Medical Association with Dr. Emil Mayer as chairman reported on "The Toxic Effects Following the Use of Local Anesthetics."¹⁶ The report of that committee might well be read by those who intend to use local anesthetics. Certain changes have occurred in the years since this committee's report was published, so that

3. Labat Gaston. Regional Anesthesia. Its Technic and Clinical Application. Philadelphia W. B. Saunders Company, 1922. pp. 181-185. Lundy J. S.

4. Braun. Local Anesthesia. pp. 272-280. Lundy J. S. Local Anesthesia for Operations on the Neck. Current Res. Anesth. & Analg. 8: 153-160 (May-June) 1929.

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6. Labat. Regional Anesthesia. pp. 48-52.

7. Braun. Local Anesthesia. pp. 187-200.

8. Evans, C. H. Spinal Anesthesia. Principles and Technique, New York, Paul B. Hoeber, Inc., 1929. Tovel, R. M. Spinal Anesthesia. Minnesota Med. 14: 531-536 (June) 1931. Spinal Anesthesia. Canad. M. A. J. 28: 404-409 (April) 1933.

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10. (a) Lundy J. S. The Technic of Nerve Blocking for Various Orthopedic Operations. Proc. Staff Meet. Mayo Clin. 4: 77-79 (March) 6: 1929. (b) The Conservative Use of Anesthetics. South. M. J. 29: 42-45 (Jan.) 1936.

11. Labat. Regional Anesthesia. pp. 57-98, 108-117.

12. Labat. Regional Anesthesia. pp. 99-108, 163-167. Mead, Sterling. Anesthesia in Dental Surgery. St. Louis. C. V. Mosby Company, 1935.

13. Braun. Local Anesthesia. pp. 289-294. Lundy J. S. and Tovel, R. M. Anesthesia. Useful Agents and Methods for Gynecological and Obstetrical Procedures. In Curtis, A. H. Gynecology and Obstetrics. Philadelphia, W. B. Saunders Company, 3: 1044-1068, 1933.

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15. In addition to the references directly mentioned the following are of interest.

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Eggleston, Cary and Hatcher, R. A. Further Contribution to the Pharmacology of the Local Anesthetics. J. Pharmacol. & Exper. Therap. 13: 433-487 (Aug.) 1919.

Nowak, S. J. G. The Urinary Excretion of Novocain After Spinal Anesthesia and the Theory of Toxic Absorption. Current Res. Anesth. & Analg. 12: 232-242 (Nov-Dec.) 1933.

16. Mayer, Emil. The Toxic Effects Following the Use of Local Anesthetics. An Analysis of the Reports of Forty-Three Deaths Submitted to the Committee for the Study of Toxic Effects of Local Anesthetics of the American Medical Association and Recommendations of the Committee. J. A. M. A. 82: 876-885 (March 15) 1924.

From the Section on Anesthesia, the Mayo Clinic.

1. Useful Drugs. Chicago. American Medical Association, 1928. p. 98.

2. Braun, Heinrich. Local Anesthesia, Its Scientific Basis and Practical Use. ed. 2. Philadelphia. Lea & Febiger, 1924. pp. 304-324. Lundy, J. S. Anesthesia for Surgical Procedures Involving the Stomach and Duodenum. In Lusterman, G. B. and Balfour, D. C. Stomach and Duodenum. Philadelphia. W. B. Saunders Company, 1935. pp. 242-257.

certain portions of the article are not up to date, most of it, however, is as true today as when it was published. Certain points should again be stressed at this time. For example, it was recommended that cocaine should not be injected under submucous tissue or subcutaneously, and also that cocaine paste or mud should not be used as a preoperative measure. Local anesthetics should not be injected into the urethra which has been traumatized recently by instrumentation. The committee was of the opinion that local anesthetics might be applied in the following concentrations and total amounts: "Cocaine in the mouth and epipharynx (preoperative) 5 per cent, in the nose, not over 10 per cent, and in total amounts of from 10 to 15 minims, containing from 1 to 1½ grains, in the eye, not over 5 per cent, in the larynx and bronchi, not over 20 per cent—preferably 10 per cent in two applications—and not over 15 minims total, containing from 1 to 1½ grains. Procaine should not be used in greater concentration than 1 per cent, apothecine not greater than 2 per cent, and not more than 1½ grains, butyn should not be injected but may be applied in 2 per cent solution. Epinephrine serves a valuable purpose in causing a bloodless field and in delaying the absorption of the local anesthetics, especially procaine, but the addition of epinephrine in amounts of 1 mg [I would assume this to mean 1 cc of 1,000 solution] or more to a solution of cocaine often results in a greater degree of toxicity than that from cocaine alone when rapid absorption takes place, hence, the use of larger doses of epinephrine with cocaine is deemed unsafe and epinephrine should not be used in greater concentration than 1/10,000 and of this not more than 10 minims with cocaine. Somewhat larger total amounts of epinephrine may be used with solutions of procaine, but not more than 1 mg of epinephrine should be used, and even this dose may be unsafe in patients suffering with hyperthyroidism."

There are certain properties which a local anesthetic should have to be of practical value, namely, (1) anesthetic properties, (2) solubility in water, (3) relative nontoxicity, (4) ease of sterilization, (5) freedom from irritating qualities, and (6) compatibility with a vasoconstrictor. In selecting a local anesthetic for a given purpose one can judge rather quickly the suitability of the drug for the purpose by grading its usefulness on the basis of these six points and by estimating how fully the drug meets the requirements in each of these criteria. The U. S. Pharmacopeia lists drugs that are not patented or are no longer patented, and such drugs have earned their place there by virtue of their long periods of usefulness. These drugs will be discussed first, and there will then follow brief comments on certain newer agents not yet listed in the Pharmacopeia.

COCAINE (COCAINE)¹⁷ $C_{17}H_{21}O_4N$

When cocaine hydrochloride is to be used as a local anesthetic for instillation into the eye, 1 or 2 drops of a 4 per cent solution is used. As a local infiltration anesthetic for tonsillectomy about 10 or 15 cc of a 0.2 per cent solution is used. In order to anesthetize the larynx preliminary to induction of general anesthesia and the introduction of an intratracheal tube, a 5 to 10 per cent solution of cocaine is sprayed into the nose, the patient being requested to inhale. Cocaine hydrochloride is used as a local anesthetic in the urethra in concentrations of 0.25 per cent, about 5 cc being used. It is used

in the nose in the form of the so-called cocaine pack and also as cocaine mud. It is used in a concentration of 20 per cent or less as a surface anesthetic in the oropharynx, larynx and trachea and for esophagoscopy, it is also used as a surface anesthetic in the pharynx.

Cocaine hydrochloride has been used in dilute solution as an infiltration anesthetic for many types of superficial operations, and it has been used intraspinally in 2 per cent concentration and in amounts of from 0.5 to 1 cc. The difference in its effect intraspinally was that the dose had to be small enough so that anesthesia was produced without motor paralysis. The danger in using cocaine, of course, is that some people are susceptible to it and symptoms of poisoning develop from even a small dose, such symptoms being shortness of breath, increased pulse rate, a pronounced period of excitement, tremor, and sometimes convulsions. If the dose is overwhelming, cardiac inhibition will take place during the convulsions.

Cocaine hydrochloride can be incorporated into gels for superficial dressings, but the dose applied at one time must be small and toxic effects must be watched for. Barbiturates should be used prior to the administration of cocaine as a means of minimizing the severity of convulsions, or to minimize them should they develop. Barbiturates need not be given in doses large enough to produce vertigo in order to be helpful, and if a toxic reaction does develop a soluble barbiturate should be injected intravenously in sufficient amounts to control convulsions.

Destruction of cocaine hydrochloride in the body is relatively slow, which accounts for the more frequent accidents with it. It produces vasoconstriction, whereas synthetic anesthetics do not. Cocaine is a mydriatic. It is incompatible with alkalis and with sodium borate. It is not antiseptic and is a habit-forming drug. The internal dose is 0.015 Gm (one-fourth grain).

The value of having a solution of a suitable soluble barbiturate immediately available in the syringe has been demonstrated in the case of a woman who had taken a dose of cocaine between 0.5 and 1 Gm and convulsions had begun. Immediately after administration of the antidote the convulsions stopped.

ETHYLIS AMINO BENZOAS, OR BENZOCAINE (INTRODUCED AS "ANESTHESIN") $C_9H_9NH_2COO(C_2H_5)$

Benzocaine is used as a local anesthetic for ulcers, wounds and mucous surfaces, as a dusting powder or ointment. It is also used internally to relieve pain in gastric ulcer and cancer. The dose is from 5 to 8 grains (0.3 to 5 Gm) internally.

BUTESIN (BUTYL PARA-AMINO BENZOATE) $C_{11}H_{13}NH_2COO(C_4H_9)$

A preparation that is used widely consists of a compound of butesin and trinitrophenol (picric acid). Since 1924 it has been listed in New and Nonofficial Remedies as "butesin picrate" and it was advised for use in the treatment of burns, ulcers and other denuded painful lesions of the skin. The ointment should contain the drug in 1 per cent concentration.

Externally butesin is applied as a dusting powder, either pure or diluted. It may also be used in the form of suppositories.

PHENACAINAE HYDROCHLORIDUM (HOLOCAINE)¹⁷ $C_9H_9N_2O_2 \cdot HCl \cdot H_2O$

Holocaine is a local anesthetic like cocaine but it is more quickly effective. Five minims of a 1 per cent aqueous solution instilled into the eye usually causes

¹⁷ Pharmacopeia of the United States. Eleventh Decennial Revision.

anesthesia in from one to ten minutes. The patient may complain, however, of smarting. The drug is antiseptic and anesthetic. Solutions of it are permanent and are not injured by boiling. It is not a mydriatic.

PROCAINAE HYDROCHLORIDUM, OR PROCAINE HYDROCHLORIDE (ALSO CALLED "PROCAINE" AND INTRODUCED IN MEDICINE AS 'NOVOCAINE')¹⁹
 $C_{15}H_{21}O_2N, HCl$

Procaine hydrochloride is the best and safest of the synthetic local anesthetic agents. It is not very efficient as a surface anesthetic, but when used for that purpose it is sometimes used in small amounts up to a 10 per cent concentration. It is especially useful for infiltration anesthesia and it is effective in solutions of 0.5 per cent. When preliminary medication has been given in sufficient doses to produce a marked effect, even a 0.25 per cent solution of procaine hydrochloride is effective for infiltration anesthesia. When small amounts of procaine hydrochloride are to be used a 1 per cent solution may be preferred, especially if one wishes to minimize the amount of edema and distortion of the tissue to be incised.

Intravenous injection of a small dose of the drug is not without danger. I have observed an adult woman to be thrown into a convulsion by the intravenous injection of 3 cc. of a 1 per cent solution of procaine hydrochloride, yet this patient tolerated the average amount of the drug when subsequent injection was carried out with the careful avoidance of intravenous injection.

Block anesthesia of certain large nerve trunks such as the sciatic nerve and brachial plexus, may require a 2 per cent solution in order to accomplish satisfactory anesthesia, however, only small doses of such a concentration may be used. In spinal anesthesia the dose varies from as low as 30 or 40 mg. for operations on the anus, up to doses of 200 mg. for large vigorous men when an upper abdominal operation may last more than an hour. The principal contraindication to the subdural use of procaine hydrochloride is debility, and the more marked the debility the more definite the contraindication. Regardless of whether the debility is marked by one or more symptoms, such as, for example, if the hemoglobin is less than 50 per cent, spinal anesthesia is contraindicated except in small doses and under certain special circumstances. Patients with disease of the central nervous system and some with unstable nervous systems are, for medicolegal reasons, unsuitable for spinal anesthesia.

Some of the untoward symptoms encountered during spinal anesthesia are probably brought about by the systemic effect of procaine hydrochloride in the blood stream.¹⁸ Procaine hydrochloride is very quickly absorbed from the spinal fluid and if it reaches a sufficient concentration in the blood stream, it is sure to produce certain systemic effects such as nausea, vomiting and exaggeration of the fall in blood pressure. It may also produce other symptoms which are as yet not recognized as being due to this systemic effect. Procaine hydrochloride is absorbed from the spinal fluid, according to Nowak, fast enough so that the decomposition products appear in the urine in twelve minutes. It is rather commonly observed that nausea following the injection of procaine into the spinal fluid appears on the average in about twelve minutes, whereas the most marked point in the fall in blood pressure will appear on the average of about twenty-

two minutes after injection of procaine hydrochloride subdurally. These observations coincide with my theory that part of the untoward result during spinal anesthesia is due to the presence of procaine in toxic quantities in the circulating blood. Since Eggleston and Hatcher, and Dunlop, demonstrated that procaine is largely destroyed by the liver,¹⁰ it occurred to me that, if the speed of circulation could be regulated by ephedrine, the rate of absorption of procaine from the spinal fluid could be delayed more easily and the rate of detoxication in the liver could be slowed, thus producing longer anesthesia. To accomplish this purpose we have intentionally tried to lower the blood pressure of the average adult patient to from 80 to 90 mm. of mercury systolic by using 25 instead of 50 mg. of ephedrine hydrochloride. If the blood pressure of a patient should fall below 80 mm. systolic during or subsequent to spinal anesthesia, from 0.5 to 1 cc. of epinephrine in 1:1,000 solution can be given intramuscularly, or, if more immediate measures are desired, 25 mg. of ephedrine can be given intravenously.

For sacral block, for the average adult, not more than 100 cc. of a 1 per cent solution of procaine should be used. For deep cervical block a 1 per cent solution is used not exceeding 50 or 60 cc. in amount, for superficial cervical block 20 cc. of a 1 per cent solution may be used on each side. For extensive bilateral paravertebral block, about 5 cc. of a 1 per cent solution is injected around each nerve root, the total amount of solution injected not exceeding 100 cc. For dental block a 2 per cent solution is used, and usually from 5 to 10 cc. is injected. When there is pain from an abscessed tooth or from some similar condition it may be necessary to double the concentration of the solution, a 3 or 4 per cent solution of procaine being necessary.

When procaine hydrochloride is to be instilled into the urethra, one must be certain that the lining membrane of the urethra is intact, otherwise instillation would act as an intravenous injection and would be almost as dangerous. In such cases absorption would be rapid and the symptoms would simulate those following intravenous injection of too large a dose of procaine hydrochloride. This is especially true because in order to produce any degree of satisfactory anesthesia one must use a 5 to 10 per cent solution of procaine hydrochloride in the urethra. While such concentrations preclude use of a large volume of solution only so much of the solution should be used as will bring about the required degree of anesthesia.

The question²⁰ of the dosage of procaine hydrochloride to be used is frequently raised, and there are several factors which should be considered in judging whether a certain dose of procaine hydrochloride will be safe for a given patient. Since the answer must state facts concerning the concentration and amount of solution, the time consumed in its injection and the condition, size and age of the patient, I shall for purposes of brevity attempt to combine these factors into a formula which in a general way in regional anesthesia can be taken as an index of the reaction of the subject

$$\frac{CA}{RT} = \text{Reaction}$$

C is the concentration of procaine hydrochloride solution, A the amount of solution, R the time consumed for injection and T the patient's tolerance for the drug.

¹⁸ Lundy J. S. High Caudal Block Anesthesia. S. Clin. North America 15: 1271-127 (Oct.) 1935.

¹⁹ Sollmann Torald. A Manual of Pharmacology, ed. 4 Philadelphia W. B. Saunders Company 1934 p. 351.
²⁰ Lundy J. S. Balanced Anesthesia. Minnesota Med. 31: 399-404 (July) 1926.

under the circumstances of its use in a given instance. If this index assumes too large a value, an untoward reaction results. Examples of values which are within safe limits will be given later. The degree of tolerance is estimated on a basis of 1 to 4, T1 meaning a low tolerance between T2 and T3, T2+, an average tolerance, and T4 a high tolerance.

Tolerance is estimated from the age, weight, blood pressure, pulse rate, and hemoglobin. It varies inversely, for example, with variations from the mean adult age, which may be taken to lie in general between the ages of 25 and 50 years, in other words, the greater the variation from the mean of those ages, the lower the tolerance. Tolerance varies directly with the weight, regardless of whether the patient is of normal development or is overweight. Normal blood pressure and pulse rate indicate average tolerance, the greater the variation from normal in these respects, the lower the tolerance. Tolerance is therefore a function of these five factors. The greater the body weight and the higher the value for hemoglobin, within normal limits, the greater the tolerance. On the other hand, the greater the variation from the mean age and the greater the departure from normal blood pressure and pulse rate, the less the tolerance. Specific examples of such combinations for different tolerances are shown below.

Tolerance	Weight	Hemoglobin	Age	Blood Pressure		Pulse Rate
				Systolic	Diastolic	
T ₁	100	40	60	110	60	96
T ₂	150	80	40	120	80	72
T ₄	200	95	30	130	85	64

From this formula the tolerance is estimated at the beginning of injection. If untoward results occur in spite of these precautions, the explanation may be found in several causes. Rough handling or pain may either directly or indirectly be responsible. Shock to persons susceptible to pain may be sufficient to lower their tolerance to the drug injected, or the apprehension aroused by the anesthetist's lack of skill may lead to evidence of intolerance. In many cases injection can be continued under light general anesthesia without any reaction, and tolerance is often raised by the substitution of a more skilful and confident anesthetist. Sudden untoward reactions usually are the result of direct injection into a blood vessel.

Besides these cases in which lowered tolerance is explainable there is a small number in which there is no apparent reason for the subnormal tolerance. The general robustness of the patient, his usual occupation, the particular disease he is suffering from or any functional abnormality which cannot be estimated or which may not be sufficient to be classified as a specific disease all have some influence on tolerance.

The formula is therefore provisional, it serves as a guide at the outset, and in most cases it can be followed throughout if injection is made carefully and skilfully. The reaction to the first few cubic centimeters of the

1% 100 cc 1/2 hr T2+	0.5% 200 cc 1/4 hr T1+	0.5% 200 cc 1/2 hr T1	2% 50 cc 1/2 hr T3
2% 40 cc 1/2 hr T2+	0.5% 500 cc 1/2 hr T3+	0.5% 300 cc 1/2 hr T2+	2% 7 cc 1/12 hr T2+

anesthetic is the test of its accuracy, and if there is any untoward reaction the formula must be altered. Untoward reactions may be avoided by the slow injection of the anesthetic, provided the needle has been properly placed. The relative effects of various solutions can be compared by means of the formula previously given. The values shown here are examples of the circumstances under which an injection would prob-

ably produce anesthesia without any untoward reactions. The degree of the untoward reaction to procaine hydrochloride varies directly with the rate of absorption of the drug. It is obvious, therefore, that if one used 100 cc of 1 per cent solution of procaine in a given instance one would not ordinarily use more than 40 cc of 2 per cent solution yet might use as much as 300 cc of 0.5 per cent solution under the same circumstances.

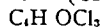
Epinephrine is generally believed to prolong the local anesthetic action of drugs such as procaine hydrochloride. There are certain conditions, however, in which its use is contraindicated, for example as has been pointed out before, for patients with exophthalmic goiter. The dental operator must also be most careful in the use of epinephrine, since it is usually in concentrated form when he uses it that is he will add 1 or 2 drops of a strong solution of epinephrine to 1 or 2 cc of the solution of the local anesthetic to be injected. An untoward and occasionally very severe reaction may develop. Surgeons and anesthetists who add epinephrine to the local anesthetic solution occasionally encounter a patient who apparently has an idiosyncrasy to epinephrine, or perhaps too much of this agent may be given. I myself use about 6 minims (0.4 cc) of a 1:1,000 solution of epinephrine chloride or 1 cc of 1:2,600 to each 100 cc of procaine hydrochloride solution, regardless of the strength of the procaine hydrochloride solution, unless I think its use is contraindicated by the patient's general condition or unless an untoward reaction develops following injection of the first part of the solution. Probably the most satisfactory way to add epinephrine is from sterile ampules.

QUININAE ET URAE HYDROCHLORIDUM (QUININE AND UREA HYDROCHLORIDE)¹⁷



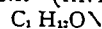
Quinine and urea hydrochloride should not be used for local anesthesia in stronger concentration than 0.5 per cent, as a stronger concentration than this may produce destruction of tissue. Injection should be made slowly in order to avoid a fall in blood pressure, which may reach a dangerously low level if the drug is injected intravenously. When the drug is injected hypodermically, it produces an anesthetic action which may be very prolonged, sometimes for several days. It is used because of its prolonged effect in operations on the anus, especially for hemorrhoids. It should not be used in diseased tissue or in concentrated solutions in healthy tissue. For application to mucous membranes, solutions varying in strength from 10 to 20 per cent should be used. For intramuscular injection, 1 Gm in 10 cc may be employed. Care should be exercised not to inject near important nerves.

CHLOROBUTANOL (CHLORETONE)¹⁷



Chlorobutanol as a local anesthetic is used principally to secure temporary relief from irritations and lesions in the gastric mucosa. Part of its effect, of course, is systemic. It may be used preliminary to the oral administration of ether. The dose is 10 grains (0.6 Gm).

ANTIPIRINA (ANTIPIRINE)¹⁷



Antipyrine illustrates the close association in chemical structure between the antipyretics and the anesthetics. Antipyrine by mouth is effective in doses of 15 grains (1 Gm). On mucous membranes of the

nose and throat it has a local anesthetic effect when used in 5 per cent solution or when used as a dusting powder. It has been used in combination with small quantities of cocaine for the milder types of acute rhinitis or laryngitis. It has also been used as a local anesthetic for cystoscopy.

ETHYLIS CHLORIDUM (ETHYL CHLORIDE)¹⁷
 C_2H_5Cl

Ethyl chloride is used as a local anesthetic and depends for its action on the physical property of freezing. Since it is very inflammable, precautions against fire are necessary in using it. It is slightly soluble in water and is freely soluble in alcohol and ether. Its specific gravity is 0.921 at 0°C, its boiling point from 12 to 13°C. Ethyl chloride is allowed to escape from its container by holding the container so that the valve is at the dependent end. The tube should be held at such a distance from the area to be anesthetized that the stream of ethyl chloride breaks into a spray at the surface of the skin. The stream should not strike the skin before it has vaporized into spray form.

There are two methods of anesthetizing the area to be incised. One is to freeze solidly the spot to be incised, and the other is to freeze a ring of tissue around the tissue to be incised. The freezing that produces the anesthesia and solidifies the tissue at the site of the incision makes extra pressure with the scalpel necessary and often painful. By freezing a ring of tissue around the area of incision it can be incised with less pressure. In attempting to use ethyl chloride as a local anesthetic in dental operations one must take the precaution of having the patient hold his breath, to avoid inhaling the vapor, if a condition of general anesthesia is to be avoided. General anesthesia with ethyl chloride can be dangerous.

MAGNESII SULFAS (MAGNESIUM SULFATE)¹⁷
 $MgSO_4 \cdot 7H_2O$

Magnesium sulfate has been used by lumbar subdural injection to produce spinal anesthesia in cases of tetanus. If injected intravenously or intramuscularly, it depresses the muscles and the central and peripheral nervous systems, and it may arrest respiration. Concentrated solutions of the drug have been used in the form of local applications for various inflammatory conditions such as sprains, burns and erysipelas, with allegedly beneficial results. In tetanus six daily intramuscular injections of 0.6 cc (10 minims) of a 25 per cent solution of crystalline magnesium sulfate for each kilogram of body weight may be given, or in severe cases 0.1 cc (1½ minims) of a 25 per cent solution for each kilogram of weight may be given intraspinally.¹

MENTHOL¹⁷
 $C_{10}H_{18}O$

Menthol affects the nerve endings that register perception of cold and it thus indirectly acts as a local anesthetic. It is used in neuralgia or headache particularly, in the form of "menthol pencils," as a cooling counterirritant, being rubbed over the painful area. As an antipruritic it is applied in an ointment or oily solution containing from 1 to 2 per cent of the drug. It is sometimes employed internally for the relief of gastric pains. It may be used in a warm mixture with camphor and olive oil for earache. The formula that has been used is menthol 7 grains (0.45 Gm.) camphor 7 grains and olive oil 1 ounce (30 cc.)

PHENOL¹⁷
 C_6H_6O

Phenol is employed as a local anesthetic to relieve itching and is used in a 1 per cent solution or in ointment. A fraction of a drop of phenol applied to the skin will make it possible to introduce through this point a hypodermic needle with relatively little pain. It is preferable, however, to raise a wheal with procaine hydrochloride in the superficial area of the skin. Phenol is used in a 5 per cent solution with warm glycerin as a local anesthetic, in the form of ear drops for such conditions as otitis media, occasionally myringotomy is attempted, but anesthesia under such conditions is often insufficient. Because of its cauterizing properties, it is seldom used in other ways as a local anesthetic. The dose is 0.06 Gm. (1 grain). Phenol is antiseptic.

NEW DRUGS

The following discussion perhaps might well have been omitted, but the recent rapid progress in the development of local anesthetics was brought about and encouraged by certain demands, some of which are at least partly satisfied by some of the new drugs. Examples of these follow. The demand for a surface anesthetic, for example, has produced the drug butyn, which has been used for many years.

PARA-AMINO BENZOYL γ DINORMAL BUTYL
AMINO PROPANOL SULFATE (BUTYN)²¹
[$NH-C_6H_4-CO-(CH_2)_2-N(C_4H_9)_2$]; H_2SO_4

Good surface anesthetics are not common. One that is used with considerable satisfaction is butyn. It is used as a surface anesthetic in 2 per cent solution. It is used for anesthetizing the throat and nose by spraying, a small amount of 5 or 10 per cent solution being used. In a 5 or 10 per cent solution as a spray, butyn takes the place of a 10 to 20 per cent cocaine spray for anesthetizing the throat and larynx prior to the introduction of the intratracheal tube under general anesthesia. Butyn is also used with considerable satisfaction by ophthalmologists in an ophthalmic ointment of 2 per cent concentration.

In the use of butyn one should be on guard for idiosyncrasy, since occasions have developed when it seemed that the patient was hypersensitive to butyn. The butyn solution is somewhat irritating when instilled into the eye, and for that reason it has not become as popular as it would have otherwise. Butyn is not antiseptic. It may be used in gels and ointments, in 0.5 or 1 per cent concentration. Butyn is not habit forming.

BENZOYL γ (2 METHYLPIPERIDINO) PROPANOL HYDRO
CHLORIDE (METYCAINE)²¹
 $C_{16}H_{21}COO(CH_2)_2NC_4H_9 \cdot HCl$

Metycaine is a good addition to the list of local anesthetic agents. It may be used as a surface anesthetic, for injection or for block anesthesia. It is quite a different substance chemically from cocaine, butyn or procaine hydrochloride. It is a little more toxic than procaine hydrochloride, but a little less of it is required and a correspondingly smaller dose may be used. It has been used rather successfully by dentists and others who develop a sensitivity to procaine hydrochloride and get a so-called procaine hydrochloride or novocain dermatitis. The potency of metycaine compared to procaine hydrochloride in clinical practice is about as 7.5 is to 10, that is, if 100 mg. of procaine hydrochloride should be selected for intraspinal administration, 75 mg. of metycaine would be approximately equivalent. And

thetia is said to last a little longer with metycaine than with procaine hydrochloride

Because of its chemical composition and usefulness, metycaine fills a need in anesthesia not filled by any other drug, and for that reason it is discussed briefly here. It has been used in 4 per cent concentration in an ophthalmic ointment base. It has also been used in gels and ointments in 5 per cent concentration.

Another surface anesthetic that has been introduced recently and that has a more prolonged action than those already mentioned is pantocain.²² This drug is ten times as toxic as procaine hydrochloride but is effective in one-tenth as great a dose. It has been used as a spinal anesthetic with considerable satisfaction, but it cannot be considered as safe as procaine hydrochloride. Its use might well be avoided by the inexperienced person. It is used as a surface anesthetic by instillation into the eye. It has also been admixed with procaine hydrochloride in varying proportions, and it may be incorporated in gels and ointments in 1 per cent concentration for application superficially for the relief of pain.

One other surface anesthetic is diothane. This drug has been used in 1 per cent concentration for cystoscopy and for anesthetizing the urethra. It has also been used in ointments and gels with considerable satisfaction, the concentration being 1 per cent. Untoward results appear to be uncommon, but the thirty-minute period necessary for development of good anesthesia, together with the cost of the drug, offers a practical objection to its use. I have purposely omitted nupercaine from this discussion.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.

HOWARD A. CARTER, Secretary

THE INTERRUPTED LOW FREQUENCY AND THE CONSTANT ELECTRIC CURRENT IN MEDICINE

Currents belonging to this classification are widely used in medical practice and are unquestionably of value in the treatment of a limited number of conditions.

Since many machines on the market deliver several types of current, the most common types may be mentioned. The interrupted low frequency current may be unidirectional or alternating. The unidirectional currents include the ordinary galvanic current, which may be interrupted by various methods. The sinusoidal current may also be unidirectional, or in other words, one half wave of an alternating current is suppressed. The alternating currents of low frequency include the faradic and the alternating sinusoidal current. Turrell¹ and Kovacs² have described the various types of current in detail.

INTERRUPTED LOW FREQUENCY CURRENT

The theory of the action of interrupted low frequency current on the tissues is based on several well known chemical principles. Salts in solutions dissociate into

positively or negatively charged ions, which are capable of conducting the electric current. The cell protoplasm contains in addition to the inorganic ions colloidal particles, which are in suspension or solution and which may themselves be electrically charged. When the current is passed through the tissues the electrochemical changes produced may stimulate nerves or cause muscles to contract. Since muscle contraction is easily produced by interrupted currents of low frequency, they are used to treat any condition in which the exercise of muscle by electrical stimulation is desired, as in certain diseases of the nervous system.

Electrical stimulation of muscles is usually employed with other valuable physical therapeutic agents such as dry heat, massage, muscle splinting and reeducational exercises. It has to be used with these other procedures intelligently or the use of electricity may prove definitely harmful. For example, in poliomyelitis, electrical stimulation improperly used may overfatigue the weakened muscle and stimulate the tone of stronger muscles, thus interfering with muscle balance. Experiments on animals by Chor³ have verified the clinical observations on the harmful effects of electrical stimulation of paralyzed muscles in the early stage of impairment.

In peripheral nerve disease, electrical stimulation, by providing muscular exercise, may prevent atrophy and fibrosis of the muscle while the nerve is regenerating, but further experimental work is necessary before final conclusions can be made. Hartman⁴ showed that, following treatment by galvanic stimulation, there was no material difference in the atrophy of muscles between the treated and untreated denervated muscles. Bourbon⁵ advises the employment of galvanic stimulation in facial paralysis.

Galvanic stimulation is also used in the flaccid stage of hemiplegias (early), myelitis and other upper motor neuron lesions when the muscles are flaccid. Its use is of little value in combined cord sclerosis, progressive muscular atrophy and myasthenia gravis (Weisenburg and Alpers⁶). In cerebrosplastic paralysis, Ryerson⁷ and Gordon and Brown⁸ are of the opinion that any form of electrical stimulation is contraindicated. Pollock⁹ states

The only requirement of electrotherapy is that it shall produce a contraction of the paralyzed muscle. Obviously, this cannot be brought about by stimulation with the faradic current, as the duration of each shock is too short in relation to the changed chronaxia of the nerve and muscle. Galvanic current must, therefore, be used. It may be used in the simple form of a continuous current, or in the form of sinusoidal currents of various types of waves.

Faradic current is used to stimulate muscles that are poor in tone but have a normal nerve supply. It was formerly much used in exercising muscles in patients undergoing the Weir Mitchell treatment of the psycho-

²² Sise L. F. Pantocain Glucose Solution for Spinal Anesthesia. *S. Clin. North America* 15: 1501-1511 (Dec.) 1935.

¹ Turrell W. J. The Physiologic and Therapeutic Action of Interrupted Currents of Low Frequency and of the Constant Current, in *Principles and Practice of Physical Therapy* edited by Mock, Pemberton and Conlier, Hagerstown, Md., W. F. Prior Company, Inc. 1932 vol. 3 chapters 9 and 10.

² Kovacs Richard. *Electrotherapy and Light Therapy*. Philadelphia L. & Feilger 1932 p. 137.

³ Chor Herman. Some Problems in Muscle Disorder. *Physiotherapy Rev.* 16: 35 (March-April) 1936.

⁴ Hartman F. A. Blatz W. E. and Kilborn L. G. Studies in Regeneration of Denervated Mammalian Muscle. *J. Physiol.* 63: 92 (Sept.) 1919.

⁵ Bourbon O. P. Facial Paralysis. *Arch. Otolaryng.* 22: 285 (Sept.) 1935.

⁶ Weisenburg T. H. and Alpers B. J. Physical Therapy in Nervous Diseases in *Principles and Practice of Physical Therapy* vol. 1 chapter 16.

⁷ Ryerson E. W. Physical Therapy in Cerebral Spastic Paralysis in *Principles and Practice of Physical Therapy* vol. 1 chapter 9.

⁸ Gordon R. G. and Brown M. F. Physical Treatment of Paralysis in Children. *Brit. J. Phys. Med.* 9: 189 (Feb.) 1935.

⁹ Pollock L. J. *Principles and Practice of Physical Therapy* 2: 7 1933.

neuroses. In such cases exercise and massage are probably of as much value. Painful faradic stimulation has also been used in hysterical individuals as a means of fortifying or inducing suggestion. Turrell¹ has emphasized the danger that can arise from the use of the faradic current because of its tetanizing effect. This can produce overfatigue and diminished blood supply in the muscle.

Pollock⁹ says

Sinusoidal current and other forms of wave currents have only the advantage of relative painlessness. There is a seeming advantage in the fact that at times a larger electrode is used and rhythmic contractions are produced in large muscle groups. This is a disadvantage and care should be exercised to stimulate only the parietic muscles.

THE CONSTANT CURRENT

The constant, direct or galvanic current, in addition to being used for muscle or nerve stimulation, already described, is used to deposit the ions of certain salts in solution on or in the tissues. For soluble salts this process is spoken of as "common ion transfer." The term "electrophoresis" applies to the movement of colloid particles which are either electrically charged or have absorbed charged particles. The salts of heavy metals such as copper, zinc or tin are frequently used to moisten the electrodes, and the positively charged ions of zinc, for example, will move toward the cathode when the current is passed through the tissues. Locally these ions may produce precipitation of protein at one of the electrodes depending on polarity, giving the effect of cauterization. This form of treatment has been used on the mucous membranes in the field of proctology, otorhinology and gynecology. The introduction of certain drugs into the tissues from which they may be absorbed into the blood stream and exert systemic effects offers another use of this procedure. The process just described has been referred to in the literature as "ionization," a term that is entirely erroneous. It is preferable to speak of this electrochemical phenomenon as "common ion transfer" or "electrophoresis," depending on the type of electrolyte employed. It is electrochemically incorrect and clinically misleading to speak of this method as "surgical ionization" when a caustic effect is desired and as "medical ionization" when drugs are introduced by this method for systemic effects.

It has been claimed that certain potent pharmacologic agents such as histamine may be introduced into the body by the constant current. A few reports concerning this matter have appeared in recent medical literature. These workers¹⁰ are enthusiastic, but their work seems to lack adequate control. They also have expressed the belief that it produces a greater local vasodilatory effect in the joint over which it is introduced. This point can be little more than pure conjecture.

Kling¹¹ has used histamine by iontophoresis. He has expressed the opinion that this method is superior to the subcutaneous injection of the drug or to the effect of histamine ointment massaged into the skin. Kling has discussed the systemic reaction which may be dangerous if the current is not properly controlled.

Kotkis, Melchionna and their co-workers¹² were able to demonstrate experimentally on dogs that the action of acetyl-beta-methyl-choline chloride introduced by common ion transfer was not a locally controlled reaction but a systemic reaction. They "undertook this experimental study on account of some very marked general reactions resulting from the routine clinical administration of acetyl-beta-methyl-choline chloride by iontophoresis in chronic arthritis." They claimed that the rapidity of action and duration of the effects varied directly with the intensity (milliamperage) and duration of the current. These reports would seem to indicate that this method of treatment may be suitable for certain circulatory or joint conditions, provided further controlled clinical studies give these same results, but that the method in the hands of the inexperienced is not without certain dangers.

The constant current may produce reflex vasodilatation by its stimulating action of sensory nerve endings. It may thus act on the skin like other counterirritants, such as a blister or ultraviolet radiation. Some believe that the constant current is superior to most counterirritants, because it can produce a gradual and more constant action on the skin without destructive effects.

Except in a few conditions, the recent literature would not give an unbiased reader the impression that in the fields of proctology, gynecology and otorhinology local destruction of tissue by this method has any particular superiority over other methods of treatment. As a matter of fact, few clinicians have compared the results obtained by this method with those obtained by other methods in the same type of case, so that evaluation from a strictly scientific point of view is difficult.

Electrolysis is used extensively in dermatologic practice. For hypertrichosis, exceedingly thin needles specially made for the purpose are obtainable. Some physicians prefer to use multiple needles. However, the majority prefer a single needle because of better control of result. The inactive positive electrode is of the sponge type, it should be wet with sodium chloride solution and may be held in the patient's hand.

MacKee¹³ considers electrolysis to be the best treatment for the spider nevus. All that is necessary, he states, is to puncture the central dark spot with the point of the needle. There should be no scar. He states that in telangiectasia, when the vessels are small and not too numerous, they may be occluded as a result of electrolysis and that, if this is carefully done, there will be little or no scarring.

In the field of proctology a survey by questionnaire was conducted by the American Proctological Society in the year 1934. The purpose of this survey was to determine the value of physical therapy in rectal diseases. The results of this survey, reported by Kallet¹⁴ indicated that the use of the direct current as already described, in proctology was very unsatisfactory and did not give as good results as other simpler and less time-consuming methods. Reports by Black,¹⁵ DeBere¹⁶

12 Kotkis, A. J. and Melchionna, R. H. Physiologic Effects of Acetyl Beta Methyl Choline Chloride by Iontophoresis. *Arch. Phys. Therapy* 16: 528 (Sept.) 1935.

13 MacKee, C. M. The Treatment of Skin Diseases by Physical Therapeutic Methods. *J. A. M. A.* 98: 1646 (May 7) 1932.

14 Kallet, H. I. Report of a Survey of Physiotherapy in Rectal Diseases. *Tr. Am. Proct. Soc.* 33: 134, 1934.

15 Black, W. P. The Use of Galvanism in Hemorrhoids. *Tr. Am. Proct. Soc.* 35: 139, 1934.

16 DeBere, C. J. Ionization Treatment of Pruritus Ani. *Am. Proct. Soc.* 35: 144, 1934.

10 Kovacs, Richard and Kovacs, Joseph. Mecholyt Iontophoresis. *Arch. Phys. Therapy* 15: 593 (Oct.) 1934. Iontophoresis of Acetyl Beta Methyl Choline Chloride in the Treatment of Chronic Arthritis and Peripheral Vascular Disease. *Am. J. M. Sc.* 188: 32 (July) 1934.

11 Kling, D. H. Histamine Iontophoresis in Rheumatic and Peripheral Circulatory Disturbances. *Arch. Phys. Therapy* 16: 466 (Aug.) 1935.

and Terrell¹⁷ state that in hemorrhoids and pruritus the direct current is not a satisfactory method of treatment

The use of common ion transfer of salts of heavy metals in gynecology is not as prevalent as it was several decades ago. Few reports appear in the recent literature. From theoretical considerations of the action of the electric current there is no doubt that cauterization of the mucous membranes can be accomplished by this procedure. The value of the method would depend on its safety, effectiveness and adaptability as compared with other methods used in the same type of case. Common ion transfer of copper salts in cervicitis is a method of cauterization which cannot be justly evaluated until further reports reveal how the results obtained by that method compare with those obtained in similar cases treated by surgical methods, the cautery or local drug cauterization.

In otorhinolaryngology, the same type of therapy has not only been more widely used in recent years but has found favor in the reports of many authors. The method is used in hay fever and allergic conditions, hyperesthetic rhinitis, intumescent rhinitis and chronic otorrhea. In rhinology, Hollander,¹⁸ the Alexanders,¹⁹ Volk,²⁰ Alden,²¹ Demetriades,²² Franklin,²³ Warwick,²⁴ Stovin,²⁵ Hurlburt,²⁶ Miller,²⁷ Cottle,²⁸ Tobey,²⁹ and Garfin and Pearl³⁰ feel that this method used on the nasal mucous membranes gives satisfactory results in the treatment of hay fever and rhinitis of allergic or vasomotor origin. Fibrosis of the submucosa of the nasal mucous membranes without permanent destruction of surface epithelium has been produced by common ion transfer of zinc salts. This has been proved histologically in both animal and man (Alden²¹).

It is questionable whether the effect of this method is anything more than a cauterization of the nasal mucous membrane. Schall³¹ states that Palmer treated "a group of thirty patients with vasomotor rhinitis by a local application of concentrated phenol. The immediate effect of this treatment was exactly that which was obtained by the galvanic instrument of Warwick, in that the mucous membrane showed a grayish white discoloration followed by edema and obstruction with hypersecretion. Palmer had excellent cooperation from his patients, as they voluntarily permitted biopsies to be taken. The microscopic examination revealed that

there was an increase in the connective tissue of the tunica propria with a diminution of the edema and vascularity. Of thirty cases treated by Palmer, twenty-four showed definite improvement and twelve were free from symptoms for periods of from three to nine months.

Fenton bluntly states that 'ionization as such does not do anything more than damage the mucosal tissues of the sinuses'."

Most of these authors feel that proper case selection is essential to good results. Hollander³² believes that the introduction of ionic zinc in allergic rhinitis is only palliative and not curative. The results obtained in seasonal hay fever, according to the same author, are less satisfactory, whereas in nonallergic nasal cases the results are excellent.

It would be highly desirable to know what is the consensus among allergists concerning the use of this method on the nasal mucous membranes in allergic disorders. The recent report by Duke³³ tends to throw doubt on claims made for the method, especially in the year 1933, when the amount of pollen in the atmosphere was much below the usual amount. The work of the Alexanders¹⁹ suggests that the relief obtained by this method is due to the mechanical removal of antibodies from the nasal mucous membranes. They further contend that the results are better if patients have no reagins in the blood. The usual methods of treatment used by allergists are also not uniformly satisfactory or entirely free of danger. The conclusion reached by Hurd³⁴ concerning the entire question of this method in rhinology is conservative but not destructive. He is of the opinion that the method has not been used long enough at the present time for determination of its actual value and dangers. Ramirez³⁵ has reported disappointing results obtained by this procedure in the treatment of hay fever, but in the treatment of non-specific perennial vasomotor rhinitis the results have been satisfactory.

In otology sufficient evidence on the use of this method is not available to place it on a firm scientific basis, according to Hollander,³⁶ although he admits that it may be good in selected cases. It seems to be of the most value in treating chronic purulent otitis media or chronic otorrhea. Favorable reports have been made by Friel,³⁷ Granberry,³⁸ MacFarlan,³⁹ Jobson⁴⁰ and many others. Lierle⁴¹ does not give the favorable and often enthusiastic report made by some of the other investigators. In the entire field of otorhinolaryngology, further work in the future will place this electrical method in its proper niche among the many therapeutic methods used.

17 Terrell E H Ionization Treatment of Pruritus Am Tr Am Proct Soc 35:146 1934

18 Hollander A R Ionization as a Prolonged Palliative in Vasomotor Rhinitis Arch Otolaryng 21:448 (April) 1935 Influence of Ionization on Vasomotor Rhinitis Illinois M J 214:244 (Dec) 1935

19 Alexander H L and Alexander J H Ionization of Nasal Mucous Membranes J Allergy 6:240 (March) 1935

20 Volk L D Iontophoresis in Hay Fever and Allergic Condition Laryngoscope 45:607 (Aug) 1935

21 Alden A M The Response of Allergic Phenomena to Ionization Laryngoscope 45:620 (Aug) 1935

22 Demetriades T D Zur Behandlung der vasomotorischen Störungen der Nase durch Iontophorese Monatschr f Ohrenh 61:524 (May Jun) 1927

23 Franklin Philip Treatment of Hay Fever by Intranasal Zinc Ionization Brit M J 1:1115 (June 27) 1931

24 Warwick H L Treatment of Hay Fever and Its Allied Conditions by Ionization Laryngoscope 44:173 (March) 1934

25 Stovin J S Treatment for Atrophic Rhinitis Arch Otolaryng 14:618 (Nov) 1931

26 Hurlburt J A Treatment of Hay Fever by Ionization Method Wisconsin M J 34:93 (Feb) 1935

27 Miller Clifton Hyperesthetic Rhinitis (Hay Fever) Treatment by Zinc Ionization Virginia M J 42:11 (April) 1935

28 Cottle M H Nasal Ionization by a New Simplified Technic Arch. Phys. Therapy 16:405 (July) 1935

29 Tobey H G Experiences in Ionization of the Nasal Mucous Membrane New England J Med 213:230 (Aug 1) 1935

30 Garfin S W. and Pearl S L Ionization in the Treatment of Hay Fever and Allied Conditions New England J Med 214:244 (Feb) 1936

31 Schall L A Progress in Laryngology New England J Med 213:574 (Sept 19) 1935

32 Hollander A R Intranasal Zinc Ionization Arch. Phys. Therapy 15:581 (Oct) 1934 Further Studies with Zinc Ionization in Nasal Allergy ibid. 16:359 (June) 1935

33 Duke W W Allergy as Related to Otolaryngology Arch Otolaryng 22:638 (Nov) 1935

34 Hurd L M A Critical Analysis of Methods of Physical Therapy in Rhinology Laryngoscope 45:468 (June) 1935 Treatment of Hay Fever and Hyperesthetic Rhinitis by Ionization Arch Otolaryng 22:416 (Oct) 1935

35 Ramirez M A Disappointing Results from the Ionization Treatment for Hay Fever J A M A 106:281 (Jan 25) 1936

36 Hollander A R Scientific Status of Physical Therapy in Otolaryngology Laryngoscope 45:471 (June) 1935

37 Friel A R Notes on Chronic Otorrhea New York William Wood & Co 1929

38 Granberry C E Zinc Ionization in the Treatment of Chronic Purulent Otitis Media New Orleans M & S J 78:157 (Sept) 1925

39 MacFarlan Douglas Ionization Circuit Plans for an Inexpensive Unit, Arch Otolaryng 21:456 (April) 1935

40 Jobson T B Zinc Ionization in Tympanic Sepsis J Laryng & Otol 41:383 (June) 1926

41 Lierle D M Underlying Factors in the Zinc Ionization Treatment of Middle Ear Infections Ann. Otol. Rhin. & Laryng 41:359 (June) 1932

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SATURDAY, OCTOBER 31, 1936

POTASSIUM METABOLISM AND ADRENAL INSUFFICIENCY

In the short time that has elapsed since the discovery of the hormone of the adrenal cortex, various conjectures concerning its physiologic functions have been advanced. It has been regarded as a general cellular hormone, as regulating the volume and fluid content of the blood, and, most recently, as having a specific regulatory effect on the excretion of sodium by the kidney. The latter concept is supported by a wealth of experimental and clinical evidence, which was reviewed by Loeb¹ in *THE JOURNAL* a year ago. The most striking feature of experimental and clinical adrenal insufficiency is loss of sodium ions from blood and tissue with equivalent loss of extracellular fluid. The condition may be corrected by the administration of sodium salts and adrenal cortex extract, singly or in combination. However, it has been found difficult to maintain adrenalectomized animals and patients who have Addison's disease in an entirely normal condition and with a normal blood electrolyte pattern by supplying sodium ions alone, a fact which has extended the scope of investigation to a consideration of the other metabolic disturbances accompanying adrenal insufficiency.

Abnormalities of potassium metabolism have proved difficult to reconcile with current ideas, although it has been conceded that alterations in the sodium-potassium ratio in blood and tissue may be important. The serum potassium of the experimentally adrenalectomized animal and of patients who are in the crises of Addison's disease is elevated, the increment exceeding that which could be explained on the basis of loss of fluid and hemoconcentration but rarely reaching the levels noted in potassium poisoning. These increases in serum potassium are not necessarily parallel to the degree of depletion of sodium and may at times be present even when other electrolytes of the blood have been returned to normal by the administration of

sodium salts. Allers² and Kendall³ were first to show that adrenalectomized animals could be thrown into crises of adrenal insufficiency by the addition of potassium to their diet, even while adequate supplies of sodium salts were provided, and, conversely, that a low intake of potassium in the diet was of great importance in maintaining such animals in optimal condition, with normal blood electrolytes. Their studies have been confirmed and extended by Zwemer and Truszkowski,⁴ who also have demonstrated the extreme sensitivity of adrenalectomized animals to potassium salts. These investigators have produced experimental potassium poisoning of normal animals by repeated intraperitoneal injections of potassium chloride; they found that the condition has symptoms and signs which differ in no important respect from those seen in adrenal insufficiency. Such studies seem to indicate that at least one additional function of the adrenal cortex is a regulatory one on potassium metabolism.

Proceeding from the experimental laboratory to the field of clinical medicine, there is ample evidence to support this contention. Observations⁵ on patients with Addison's disease demonstrate that a low intake of potassium will protect the patient to a considerable extent against withdrawal of sodium salts, a procedure which almost invariably precipitates a crisis of adrenal insufficiency with corresponding changes in the electrolytes of the blood. Likewise, even a high intake of sodium alone will not suffice to prevent such crises if sufficient potassium salts are administered, and even moderate reductions in the daily salt ration have been shown to provoke symptoms unless the potassium content of the diet is simultaneously reduced. Analysis of the electrolyte balance in these cases indicates that a high intake of potassium is associated with rapid loss of sodium and chloride, while a low intake of potassium favors the retention of these ions. There is some evidence to show that sufficient quantities of adrenal cortex extract appear to minimize the effect of a high intake of potassium and to reduce the loss of sodium which takes place under these conditions.

Studies on sodium balance in adrenal insufficiency will have to be reconsidered with respect to the intake of potassium, which is capable of greatly modifying the excretion or retention of sodium, other factors remaining constant. If deprivation of sodium is to be used as a diagnostic procedure in suspected cases of Addison's disease, the potassium content of the diet will have to be determined if the results are to be properly interpreted. It would appear that patients who have

2 Allers W D. The Influence of Diet and Mineral Metabolism on Dogs After Suprarenalectomy. Proc. Staff Meet. Mayo Clin. 10:406 (June 26) 1935.

3 Kendall E. C. in discussion. Proc. Staff Meet. Mayo Clin. 10:408 (June 26) 1935.

4 Zwemer R L and Truszkowski Richard. Potassium A Basic Factor in the Syndrome of Cortico-Adrenal Insufficiency. Science 83:558 (June 5) 1936.

5 Wilder R M, Snell A M, Kepler E J, Ryecart E H, Adams Mildred and Kendall E. C. Control of Addison's Disease with a Diet Restricted in Potassium. A Clinical Study. Proc. Staff Meet., Mayo Clin. 11:273 (April 29) 1936.

1 Loeb R F. The Adrenal Cortex. J. A. M. A. 104:2177 (June 15) 1935.

Addison's disease should be greatly benefited by a low dietary intake of potassium. Observations in a limited number of cases already have shown that such treatment is of decided advantage, the treated patients require less extract and sodium salts and are less subject to sudden relapses.

A clear explanation of the interrelationships of sodium and potassium metabolism in their bearing on adrenal cortical function is not yet available. The hormone may simply protect an organism against the toxic action of potassium salts, it may favor elimination of potassium by the kidney and thus prevent the accumulation of this ion in quantities sufficiently great to exert a toxic action, or it may have a direct effect on tissue cells, preventing the liberation of the intracellular electrolytes, chief of which is potassium. Until more evidence is obtained, investigators of the physiology of the adrenal glands doubtless will continue to follow the advice of von Sachs, who counseled that "the object of true investigation is to make unsparing discovery of existing contradictions and to question the facts until our conceptions are cleared up, and if necessary the whole theory and general view is replaced by a better."

THE NEW YORK DIABETES ASSOCIATION

Late in 1935 the New York Diabetes Association was organized to function as part of the New York Tuberculosis and Health Association. This association was an outgrowth of the current realization that diabetes, for which highly effective means of control are available, should not cause the tragedies for which it continues to be responsible. The objectives in general are educational—of the general public, of diabetic patients and of physicians. The association seeks to inform the public of the common symptoms of diabetes, the necessity for early and adequate medical care, and the relative parts played in diabetes by insulin, obesity, lack of physical activity, and heredity. Attempts are being made to teach diabetic patients the effectiveness of diet and insulin therapy in making life a normal one, the fallaciousness of common fears concerning the use of insulin, the importance of continuous medical supervision, the dangerous nature of advertised nostrums, the necessity for proper care of the feet, and the advisability of those who are taking insulin carrying a card stating this fact and giving the identification and dosage. The organization is also interested in making insulin available within the means of all who require it, the improvement of surgical service, the investigation of clinic and hospital facilities, the improvement of record keeping in diabetes clinics, the execution of original statistical studies, and cooperation with the dental profession.

In the first annual report,¹ dated March 1936, there is a discussion of the progress made toward these

objectives and the further lines of work indicated by the early experiences of the association. Committees dealing with the special objectives outlined seem to be, in the main, an effective method of organization. Under the direction of the committee on internal medicine, a survey of the diabetic clinics in New York City was made. This committee planned the first meeting of the clinical section and projected a series of eleven pamphlets for the education of physicians, some of which have already been published. The committee also initiated studies of nostrums and new remedies, of the history and physical examination, and of plans and diets used in diabetic clinics, and also collaborated with the chairman of the committee on lay education in the preparation of a pamphlet on helpful information for the diabetic patient. The committee on surgery studied by means of a mail questionnaire the organization of diabetic surgery in the general hospitals of greater New York. The Committee on Lay Education has published a booklet of helpful information for diabetic patients printed by the department of health and adhering strictly to professional limitations. A study of the incidence of diabetes in certain groups, namely, (a) colleges and universities, (b) industrial groups, and (c) the New York State National Guard, was begun by the Committee on Statistics. Further statistical studies under the auspices of this committee were either completed or in progress at the time of the annual report. The other major activities of the association during its first year consist in the publication of two brief notes for the medical profession on the treatment of diabetic ketosis and on insulin. An exhibit was prepared in cooperation with the New York City department of health to show the magnitude of the diabetes problem in New York, the various causative factors involved and some of the steps that are being taken toward the control of this disorder. These charts were shown initially at the annual session of the American Medical Association and have since been shown at a number of other meetings. A directory of the diabetes and metabolism clinics of New York City has been compiled. Several radio addresses have been given, and one, that by James Ralph Scott, which is a general discussion of the diabetes problem for the public, is included in the mimeograph collection of the association.

Although the initial organization of this association has been aided by a private grant, there is very little in the work proposed that could not be similarly initiated in other large cities throughout the country. If this is done, however, pooling of information and avoidance of duplication should be seriously considered. The exact extent of the need for the various activities outlined is not yet clearly evident, though it is obvious that, in a disease which can be controlled as definitely as diabetes, the need of educational and economic study must be considerable. The large scale effort that is evidenced by the organization and initial reports of this

¹ Publications of New York Diabetes Association, 386 Fourth Avenue New York.

association will doubtless receive wide interest and study. The tremendous medical and economic gain which must accrue from this work probably will not be realized, however, until after the activities have been in force for several years.

WATER FILTRATION VS CHLORINATION

A tendency is manifest in some quarters to advocate filtration of public water supplies as against chlorination. In the interests of public health and clear thinking, it seems worth while to examine the merits of this discussion. The value of chlorination in preventing water-borne infections needs no defense, as shown by the experience of many American municipalities using chlorinated water during the past ten years. Is filtration to be preferred? Filtration of a public water supply cannot guarantee the continued safety of that supply. In point of fact, some of the classic outbreaks of water-borne diseases, such as the Altona, Germany, cholera epidemic of 1892, have been caused by supplies supposedly guarded by a filtration process. In most instances today, wherever large water supplies are filtered, it is thought advisable to chlorinate the effluent as an additional or final safeguard. In general, if a community had to depend for health protection on filtration alone or chlorination alone, chlorination probably would be chosen.

Filtration possesses one obvious advantage—it can clarify a turbid water. There is no doubt that clear water makes a strong esthetic appeal. The expense of gratifying this feeling by clarifying the whole public supply is, however, considerable. Crystal clear water is not necessary for all household purposes. Where money is an object, the value of a clear water supply would probably be balanced against the urgency of other community needs.

Any method of water treatment calls for unceasing expert supervision. No water supply, whether it is initially pure or is well purified, can be trusted to take care of itself. Wolman and Gorman¹ have done a great service in pointing out the inadequacy of administrative control over the safety of water supplies in the United States and Canada. Failure to prevent the contamination of initially pure ground or surface water supplies and especially the failure to recognize the danger of cross connections between the pipes of the public water supplies and the pipes supplying water for industrial purposes or for fire protection have caused hundreds of outbreaks of water-borne disease. Wolman and Gorman conclude that "defects in collection, treatment, storage or distribution of water for public consumption are responsible for over three fourths of the water-borne illness reported in the United States during the decade 1920 to 1929. Approximately 40 per cent of the outbreaks were due to these defects and not

to the pollution of the raw water at its source." The analysis of these waters makes it plain that no method of collection, treatment or distribution is fool proof and that constant checking for defects is highly desirable.

A clear water is not necessarily free from disease germs. Neither is a water that is at times slightly turbid necessarily death dealing. If a bacteriologically safe drinking water is desired, it may be obtained by chlorination. If clarity is essential, filtration may be employed at somewhat greater expense.

Current Comment

THE RÔLE OF RENAL ISCHEMIA IN HYPERTENSION

Hypertension for scores of years has eluded the concerted efforts of many capable investigators, but, with the recent introduction by Goldblatt¹ of reliable means of producing sustained increase in blood pressure of experimental animals, progress has been rapid. The method consists in reducing the blood flow to the kidneys by compression of the renal arteries, this is accomplished with adjustable silver clamps of ingenious design applied to the vessels with specially devised instruments. The increase in blood pressure thus produced lasts indefinitely. Use of the Goldblatt clamp therefore enables workers for the first time to investigate the phenomena associated with hypertension and to differentiate etiologic from secondary factors. Although but a short time has elapsed since this fundamental contribution was described in the literature, the results of the Western Reserve investigators¹ have already been confirmed and amplified in many other laboratories. Wood and Cash² conclude, from their extensive studies, "Of several methods hitherto used to produce sustained arterial hypertension in dogs, renal ischemia, as accomplished by the Goldblatt clamp, has proven to be the most reliable and effective procedure." There is thus no doubt that a highly significant step has been made toward the solution of the problem posed by this serious degenerative disease of middle age. The earlier studies on this question were concerned with the production of systolic hypertension, this may reach from 200 to 245 mm of mercury, occasionally approaching 300 mm.³ More recent investigations,⁴ especially those of Wood and Cash, have demonstrated conclusively that renal ischemia produces a definite continued rise in diastolic pressure also. The similarity of the condition induced experimentally in animals to that occurring in human beings is thus evident. The rise in pressure is apparently not due to a

1 Goldblatt Harry Lynch J. Hanzal R. F. and Summerville W. W. Studies in Experimental Hypertension I. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. *J. Exper. Med.* 59: 347 (March) 1934. An Investigation into the Cause of Hypertension. Editorial. *J. A. M. A.* 102: 1610 (May 17) 1934.

2 Wood J. E., Jr. and Cash J. R. Experimental Hypertension. Observations on Sustained Elevation of Systolic and Diastolic Blood Pressure in Dogs. *J. Clin. Investigation* 15: 543 (Sept.) 1936.

3 Goldblatt¹ Elaut L. Hypertension artérielle chronique chez le chien par ischémie rénale. *Compt. rend. Soc. de biol.* 122: 126 1936.

4 Wood and Cash² Collins D. A. Hypertension from Constriction of the Arteries of Denervated Kidneys. *Am. J. Physiol.* 110: 616 (Aug.) 1936.

1 Wolman Abel and Gorman, A. E. The Significance of Water Borne Typhoid Fever Outbreaks 1920-1930. Baltimore. Williams & Wilkins Company 1931.

nervous mechanism, excision of the splanchnic nerves⁵ or denervation of the kidneys⁶ does not prevent or ameliorate the syndrome. A humoral mechanism is probably implicated, as suggested by Goldblatt, studies now in progress should provide an early answer to this question.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health* was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of the Red, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs.

The topics are announced monthly in advance in *Hygeia* the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are as follows:

- November 3 Community Sanitation Morris Fishbein M D
- November 10 Noise Morris Fishbein M D
- November 17 Football Injuries Morris Fishbein M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Polomyelitis Epidemic Ended—It was reported October 8 that the epidemic of infantile paralysis was at an end and that 100 WPA nurses had been withdrawn.

Society News—At a meeting of the Northwestern division of the Medical Association of Alabama in Florence, October 15, the speakers included Drs. Horton R. Casparis, Nashville, Tenn., on "Allergy in Children", Frank L. Chenault, Decatur, "Skeletal Traction", Joseph E. Hirsh, Birmingham, "Diagnosis and Treatment of Coronary Thrombosis", James G. Daves, Cullman, "Tuberculosis As I Have Found It," and Price Clayton, Russellville, "Hypertension Without Edema."

ARKANSAS

District Meetings—At the semiannual meeting of the Third District Medical Society in Forrest City, October 16, the speakers were Drs. Otis S. Warr, Memphis, Tenn., "Diagnosis and Management of Acute Circulatory Failure", Walter A. Ruch, Memphis, "Maternal Mortality", Silas C. Fulmer, Little Rock, "Hypertension", and Edward Clay Mitchell, Memphis, "Urinary Infections in the Child". The First Councilor Medical Society was addressed in Paragould, October 15, by Drs. Fenton L. Husbands, Blytheville, on "Modern Management of Traumatic Surgery", Elmer E. Francis, Memphis, "The Ruptured Appendix", Benjamin F. Turner, Memphis, "Medical Ethics and Medical Economics", Charles T. Cham-

berlain, Fort Smith, "Heart Disease Secondary to Chronic Pulmonary Disease," and Thomas P. Foltz, Fort Smith, "Bronchiectasis". At a meeting of the Fifth Councilor District Medical Society in Mount Holly, October 8, Drs. George B. Fletcher, Hot Springs National Park, discussed medical problems in Arkansas, Sidney J. Wolfermann, Fort Smith, duodenal ulcer, William R. Brooksher, Fort Smith, present status of radium therapy, and Ralph Bowen, Oklahoma City, recent advances in allergy.

CALIFORNIA

Society News—The Sacramento Society for Medical Improvement was addressed, September 15, by Dr. Edmund W. Butler, San Francisco, on "Injuries of the Chest and Abdomen That May Cause Early Death—Diagnosis and Treatment". Dr. Hugh J. Bolinger, Lodi, addressed the San Joaquin County Medical Society, September 3, on "Psychoanalysis from the Viewpoint of the General Practitioner," and Dr. Charles P. L. Majhe, San Francisco, "Diagnosis and Treatment of Obstructive Lesions of the Kidney". Dr. Clarence T. Roome, Santa Barbara, among others addressed the Santa Barbara County Medical Society, September 14, on "Aseptic Meningitis". At a meeting of the Solano County Medical Society recently Dr. Joseph E. Tillotson, Woodland, spoke on "Fractures and the Causes of Poor and Fibrous Union."

Annual Symposium on Heart Disease—The heart committee of the San Francisco County Medical Society will hold its seventh annual postgraduate symposium on heart disease, November 18-19. There will be morning, afternoon and evening sessions covering the various aspects of heart disease including diagnosis, prognosis and treatment. Recent advances in cardiology will be reviewed and evaluated and clinics with practical demonstrations will be held. At the committee's annual meeting, November 19, Dr. John C. Ruddock, Los Angeles, president of the California Heart Association, will give an illustrated address, and Dr. Eugene S. Kilgore, San Francisco, will discuss the cardiac cripple in industry. Further information may be obtained from the secretary, Dr. William Dock, 604 Mission Street, San Francisco.

ILLINOIS

Society News—Dr. Clayton J. Lundy, Chicago, addressed the Kankakee County Medical Society, October 8, on angina pectoris. The Adams County Medical Society was addressed, October 12, by Dr. Helmuth H. Kramolowsky, St. Louis, on "Importance of Urologic Diagnostic Procedures". Dr. William C. Stude, St. Louis, discussed "Indications and Technique of Hysterectomy" before the Peoria City Medical Society, October 20. At a meeting of the Will-Grundy County Medical Society in Joliet, October 14, Dr. Edward D. Allen, Chicago, spoke on "The Influence of Medical and Surgical Disease on Obstetric and Fetal Mortality". Dr. Merritt Paul Starr, Chicago, discussed endocrinology before the McHenry County Medical Society, October 14.

Chicago

Personal—Cloyd James Head, president of the Year Book Publishers, Inc., died, October 14, aged 77. Death was caused by pellagra thought to have been secondary to a metastasizing tumor discovered post mortem in the intestinal wall near the appendix. In 1901 Mr. Head, with his brother, the late Dr. Gustavus P. Head, founded the Practical Medicine Series of Year Books.

Society News—Dr. Joseph Imre Jr., Budapest, addressed the Chicago Ophthalmological Society, October 19, on the operation for detachment of the retina and plastic surgery of the eyelids. Dr. Walter Schiller, Vienna, spoke before the Chicago Gynecological Society, October 23, on "Pathology of the Cervix." Dr. Frank W. Lynch, professor of obstetrics and gynecology, University of California Medical School, San Francisco, also spoke, among others. The Chicago Laryngological and Otological Society was addressed by Drs. Lawrence J. Lawson, Evanston, Ill., on "Osteomyelitis of the Sphenoid Bone with Report of Two Cases", Robert B. Lewy, "Intravenous Use of Local Anesthetic Agents in the Treatment of Trinitus Aurium" and Robert Sonnenschein, "Brief Consideration of the History of the Development of Mastoidectomy". The Chicago League for the Hard of Hearing sponsored a series of programs in observance of National Hearing Week, October 25-31. Dr. Peter Bassoe will deliver the presidential address before the twenty-first annual meeting of the Institute of Medicine of Chicago, December 1. His paper is entitled "A Sketch of the Development of Psychiatry and Neurology in Chicago."

⁵ Goldblatt, Harry. Proc. Assoc. Path. & Bact. Boston April 9 10 1936.

⁶ Page, L. H. The Relationship of the Extrinsic Renal Nerves to the Origin of Experimental Hypertension. Am. J. Physiol. 112: 166 (May) 1935. Experimental Hypertension editorial. J. A. M. A. 105: 286 (July 27) 1935. Collins.

IOWA

Annual Clinic—The University of Iowa College of Medicine, Iowa City, will present its annual clinic, November 12-14. The speakers will be

Dr. Philip C. Jeans, Syphilis
Dr. Cecil S. O'Brien, Ophthalmology in the General Practice of Medicine
Dr. Ernest E. Irons, Chicago Pneumonia
Dr. Ruben Nomland, Epitheliomas of the Skin, Diagnosis and Treatment
Dr. Nathaniel G. Alcock, Genito-Urinary Diseases
Dr. Vernon C. David, Chicago Peritonitis
Dr. Everett D. Plass, Obstetrics
Dr. Andrew H. Woods, The Lesser Degrees of Mania and Melancholia
Dr. William Malamud, Neurasthenia.
Dr. Arthur Steindler, Diagnosis and Treatment of Compression Paraplegia
Dr. Dean M. Lierle, Otolaryngology
Dr. Clarence E. Van Epps, Neurology

Dr. Fred M. Smith will direct a symposium on peptic ulcer, while demonstrations and clinics on low back pain, arthritis, osteomyelitis of the spine, fracture deformity of the upper extremity, subdeltoid bursitis, treatment of infantile paralysis, fractures, pulmonary tuberculosis and special diagnostic measures in neurosurgery will form the remainder of the program. A smoker will be held at the Fine Arts Building Friday evening, and visiting physicians will attend the Purdue-Iowa football game Saturday.

KANSAS

Personal—Dr. Ralph M. Fellows, Topeka, has been appointed superintendent of the Osawatimie State Hospital to succeed Dr. Francis A. Carmichael, who resigned August 1.

Venereal Disease Committee—The Kansas Medical Society will appoint a committee on venereal diseases to act in an advisory capacity to the state board of health in the development and execution of programs throughout Kansas. This action followed a conference between representatives of the state board of health and the state medical society.

Society News—Dr. Charles F. Taylor, Norton, discussed pulmonary tuberculosis before the Sedgwick County Medical Society, Wichita, October 20. Drs. David W. Basham and Edwin H. Terrill, Wichita, spoke on aberrant thyroid and pernicious anemia, respectively, at the October 13 meeting.—The Atchison County Medical Society sponsored a diphtheria immunization campaign during October.—Dr. Oliver C. Wenger, St. Louis, U. S. Public Health Service, discussed "Diagnosis and Treatment of Syphilis" before the Shawnee County Medical Society, September 8.—The Washington County Medical Society was addressed in Washington, September 15, by Dr. Franklin R. Croson, Clay Center, on "Acute Intestinal Obstruction".—At a meeting of the Ford County Medical Society in Dodge City, September 11, Drs. Thomas G. Orr, Kansas City, Mo., and Lewis G. Allen, Kansas City, discussed "Diseases of the Biliary Tract" and "Radiologic Diagnosis of Conditions of the Upper Abdomen" respectively.—Dr. Lewis W. Angle discussed intestinal obstruction before the Wyandotte County Medical Society, Kansas City, October 19, and Dr. Lawrence E. Growney, abdominal pain.

KENTUCKY

State Medical Election—Dr. Henry Gilbert Reynolds, Paducah, was named president-elect of the Kentucky State Medical Association at its annual meeting in Paducah, October 9, and Dr. Joseph D. Northcutt, Covington, was installed as president. The 1937 meeting will be in Berea. Vice presidents elected were Drs. James H. Pritchett, Louisville, Harland V. Usher, Sedalia, and Branhram B. Baughman, Frankfort. It was voted to place oil portraits of Dr. Arthur T. McCormack, Louisville, secretary of the association for many years, and of his father, the late Dr. Joseph N. McCormack, in the memorial building to Dr. Ephraim McDowell at Danville. The elder Dr. McCormack, who died in 1922, was a pioneer in public health work, he was for several years a member of the House of Delegates of the American Medical Association and assisted in the reorganization of the Association in the early years of the century.

MAINE

Society News—Dr. Edwin T. Wyman, Boston, discussed the acute stage of infantile paralysis before a joint meeting of the Penobscot, Somerset and Piscataquis county medical societies August 13. Dr. Arthur T. Legg, Boston, gave an illustrated address on the orthopedic treatment of the disease.—William T. Bovie, Ph.D., of Colby College, Waterville, addressed the Kennebec County Medical Association, September 10, on "Effect of Light on Plant Growth".

Board in Charge of State Journal—With the resignation of Dr. Edwin W. Gehring, Portland, as editor-in-chief of the *Maine Medical Journal*, it was decided to turn the management of the journal over to the editorial board which, although appointed a few years ago, has never been active. Six members, one from each councilor district, constitute the board. At a meeting, September 13, Dr. Frank H. Jackson, Houlton, was chosen chairman. Dr. Gehring became editor for one year in 1935, following the expiration of his term of office as president of the Maine Medical Association.

MASSACHUSETTS

Personal—Dr. Albert M. Wigglesworth, for eleven years on the staff of the U. S. Veterans' Hospital, Rutland Heights, has been transferred to the veterans hospital at Otten, N. C.—Dr. Arthur Berk has been appointed an assistant professor of psychiatry at Tufts College Medical School, Boston.

Society News—Dr. William Richard Ohler, Boston, will discuss "The Clinical Interpretation of Laboratory Procedures" before the Pentucket Association of Physicians, Haverhill, November 12.—Dr. Allen O. Whipple, New York, will address the William Harvey Society of the Tufts College Medical School, November 6, on "Recent Advances in Surgery of the Pancreas". Dr. Frederick J. Taussig, St. Louis, discussed "The Control of Abortion" before the society, October 20.

Sedgwick Medal Awarded to Dr. Russell—Dr. Frederick F. Russell, lecturer in preventive medicine and hygiene and epidemiology, Harvard University Medical School, and professor of preventive medicine and epidemiology, Harvard School of Public Health, Boston, has been awarded the Sedgwick Memorial Medal of the American Public Health Association. The medal is given annually for distinguished service in public health. Dr. Russell was formerly general director of the International Health Board of the Rockefeller Foundation (*THE JOURNAL*, July 20, 1935, p. 209).

Memorial to Dr. Bullard—A plaque was dedicated to the memory of the late Dr. William Norton Bullard, September 19, on the ninth floor of the Medical Building at the Boston City Hospital, Boston. The floor is given over to the William Norton Bullard Memorial Laboratories and the offices of the neurologic unit. The presentation of the plaque was by Mrs. Bullard, the speakers included Drs. Stanley Cobb, Bullard professor of neuropathology, James W. Manary, superintendent of the hospital, Donald Munro, chief of the neurosurgical service, and Merrill Moore. Dr. Bullard, who was connected with the hospital from 1886 to 1906, established the chair in neurology at Harvard which now bears his name. He died in 1931.

MICHIGAN

Department of Industrial Hygiene—A bureau of industrial hygiene has been created in the Michigan Department of Health, with John M. Hepler, C.E., as director. A preliminary survey of plant conditions to determine the scope of existing industrial hazards, the location of potential hazards, and to evaluate the need for preventive measures is being undertaken by the bureau. One phase of the program will be the collection and analysis of case records of industrial diseases.

Society News—Dr. Everett D. Plass, Iowa City, addressed the medical section of the Wayne County Medical Society, October 12, on "The Induction of Labor". The society was addressed at a general meeting, October 19, by Dr. Roy W. Scott, Cleveland, on "Latent Syphilis as a Cause of Heart Disease".—At a meeting of the Kalamazoo Academy of Medicine, October 20, Dr. James H. Maxwell, Ann Arbor, spoke on "Dysphagia".—Dr. Paul S. Barker, Ann Arbor, discussed "The Use of Digitalis" before the Oakland County Medical Society in Pontiac, October 20.—Keys were presented to the fourteen living past presidents of the Michigan State Medical Society at the society's annual president's dinner, September 23.

MISSOURI

Symposium on Oxygen Therapy—The Jackson County Medical Society, Kansas City, conducted a symposium on oxygen therapy, October 13. Dr. Alexander J. Kotkis introduced the following speakers:

Alrick B. Hertzman, Ph.D., St. Louis, Physiology of Oxygen Want
J. I. Banash, consulting engineer, Chicago, Mechanical Considerations of Oxygen Therapy Apparatus.
Dr. M. Herbert Barker, Chicago, The Clinical Response to Oxygen Therapy.

The society was addressed, October 27, among others, by Drs. Morris Polsky and Paul F. Stookey, Kansas City, on "Primary Syphilis in the Female."

Social Hygiene Week—The Missouri Social Hygiene Association is sponsoring a social hygiene week in St. Louis November 1-7. There will be five open meetings with the following speakers:

Dr. Richard S. Weiss November 1 A Tribute to the Pioneers of Social Hygiene
Drs. Park J. White Jr., Jean V. Cooke and John V. Lawrence Mrs. Pearl Case Blough and Rev. Truman B. Douglass November 4 A New Outlook on Age Old Problems
Dr. Llewellyn Sale November 5 (subject not announced)
Dr. Paul J. Zentay November 6 Are We Facing the Realities in Social Hygiene?

There will be a conference on sex education at Washington University School of Medicine, November 7.

NEBRASKA

Personal—Dr. Charles McMartin has been appointed chairman and head of the department of surgery at Creighton University School of Medicine, Omaha. Dr. McMartin, who was professor of dermatology and urology, has been acting chairman of the department. Dr. Clayton F. Andrews, Lincoln, has been appointed to the medical advisory board of the compensation court of Nebraska.

Society News—Speakers before the Madison Six Counties Medical Society at West Point, September 15, were Drs. Alfred W. Adson and Andrew B. Rivers, both of Rochester, Minn., on "Diagnosis and Treatment of Spinal Cord Tumors" and "Treatment of Peptic Ulcer" respectively. The Gage County Medical Society has new quarters in the Lutheran Hospital, Beatrice, at the first meeting of the season, September 9. Dr. Clifford P. Fall led the discussion of obstetric complications. Dr. Ralph Bowen, Oklahoma City, addressed the Elkhorn Valley Medical Society in Norfolk, among others, recently, on "Recent Advances in Allergy." The Southwest Nebraska Medical Society was addressed, September 17, by Drs. Charles M. Swab on "Eye Strain Symptom Complex" and James W. Martin, "Fracture of the Leg." Both are of Omaha. Drs. Thomas P. Findley Jr., St. Louis, and Payson S. Adams addressed the Omaha-Douglas County Medical Society, Omaha, October 13, on "Clinical and Experimental Studies in Diseases of the Kidneys" and "Conservative Treatment of Surgical Kidney Disease" respectively.

NEW YORK

Eastman Memorial Lecture—Archibald V. Hill, Sc.D., Foulerton professor of research, Royal Society Institute of Physiology, University College, London, gave the Eastman Memorial Lecture at the University of Rochester School of Medicine and Dentistry, October 11. The subject of the lecture, established in memory of the late George Eastman, head of the Eastman Kodak Company and a benefactor of the university, was "Nerve Excitation."

Society News—Dr. Abraham J. Rongy, New York, addressed the Mount Vernon Medical Society, October 8, on ectopic pregnancy. At a meeting of the Syracuse Academy of Medicine, October 20, Drs. John Van Duyn II and John C. Frey spoke on "The Significance of Low Marrow Reserve" and "Relation of Blood Pressure to Vomiting in Spinal Anesthesia" respectively. Dr. George B. Andrews presented an unusual case of jaundice. Dr. Richard H. Overholt, Boston, addressed the Chautauqua County Medical Society, Chautauqua, September 22, on "Diseases of the Chest and Their Surgical Treatment." Dr. Theron W. Kilmer, police surgeon, Hempstead, L. I., addressed the Medical Society of the County of Monroe, October 13, on "The Drunken Driver." Dr. John Aikman will address the Rochester Pathological Society, November 19, on "Cyanosis of the New-Born."

New York City

First Adam Miller Lecture—Sir Joseph Barcroft, professor of physiology, Cambridge University, gave the first Adam Miller Memorial Lecture at Long Island College of Medicine, October 8, on "Development of Fetal Respiratory Movements." The lectureship was established in honor of the late Adam M. Miller, who was professor of anatomy at the college from 1914 to 1935 and dean from 1921 to 1935.

United Hospital Campaign—The United Hospital Fund of New York will seek to obtain \$2,800,000 in its 1936 appeal for funds according to the New York Times. The deficits of the seventy-nine recipients of the fund total \$2,881,643. Stuart M. Crocker, vice president of the International General Electric Company, has been named chairman of the 1936 campaign, which is expected to open in November. It was stated that 1936 showed the first decline in hospital deficits since 1929.

Society News—At a meeting of the Bronx County Medical Society, October 21, Dr. Clarence J. O'Connor made his inaugural address as president, and the work of the state medical society was discussed by Drs. Floyd S. Winslow, Rochester, N. Y., president of the state society, Peter Irving, secretary, Terry M. Townsend, president of the first district branch, and Mr. Dwight Anderson, director of public relations. Dr. George Gray Ward addressed the Bronx Gynecological and Obstetrical Society, October 26, on "Plastic Surgery for Genital Prolapse." Dr. Charles G. Darlington addressed the Bronx Pathological Society, October 20, on "So-Called Dental Tumors." A symposium on obstetrics was presented at a meeting of the Medical Society of the County of Queens, October 27, with Dr. Edward S. Godfrey Jr., Albany, state commissioner of health, as the guest speaker and ten minute papers by Drs. Harriet M. White, Richmond Hill, Henry C. Eichacker, Brooklyn, Walter H. Kerby, Woodhaven, James P. McManus, Hollis, George J. J. Lawrence, Flushing, and Moses Cohen, Long Island City, members of the committee on maternal welfare. Justices Bernard L. Shientag and Meier Steinbrink addressed the meeting of the Medical Society of the County of New York, October 26, on "Medicolegal Aspects of Trauma."

Report on Emergency Medical Relief—More than 426,750 persons on relief have received medical care from the Emergency Relief Bureau since its medical and nursing service was inaugurated in December 1932, according to a recent report. The cost of caring for these persons was \$3,002,194.07. From January 1 to June 30 of this year the bureau gave medical care to 127,318 cases at a cost of \$658,046.42. In 1935 it cared for 169,573 families at a cost of \$1,130,271.84. In 1934 99,777 relief cases received medical aid at a cost of \$881,927.95, while in 1933, the first year of the service, 30,082 families were given medical attention at a cost of \$331,947.86. The average medical case cost during the first six months of 1936 was \$5.24, a reduction of 47 per cent as compared with the average cost in 1933 which was about \$11.13. In 1934 the average per capita cost was \$8.84 and in 1935 \$6.66. The medical and nursing service maintains a panel of 4,000 physicians and one of 1,800 pharmacists, who sign an agreement with the bureau to serve relief recipients. These physicians, regardless of the fees they receive in private practice, receive \$2 for a relief visit and are called in rotation by the bureau. When a physician is called he is given the name of a pharmacy to which he may send the patient if it is necessary to write a prescription. Nurses are recruited from existing visiting nurse organizations. About 850 persons suffering from chronic ailments, who are unable to attend dispensaries and who must be hospitalized are now being cared for by a service established during the latter part of 1935. Now they are visited as often as is necessary by a physician or a nurse.

NORTH CAROLINA

Citizen's Health Committee Formed—A health conservation committee has been organized in Edgecombe County under the direction of the health officer, Dr. Lorenzo L. Parks, Tarboro. Membership of the committee is comprised of representatives of various clubs and organizations. Dr. Parks has been named secretary of the committee, which will serve in a liaison capacity between lay agencies and the health department.

Extension Course in Medicine—The extension division of the University of North Carolina and the school of medicine are cooperating in a graduate course of six lectures at Goldsboro for physicians in the eastern section of the state. Dr. Charles Reid Edwards, professor of clinical surgery, University of Maryland School of Medicine, gave the first lecture in the series, September 24. Subsequent talks, given on Thursday evenings, include the following:

Dr. Charles M. Byrnes, Baltimore Vascular Diseases of the Brain.
Dr. Warren T. Vaughan, Richmond, Va. Allergy.
Dr. Thomas Fitz Hugh Jr., Philadelphia Common Forms of Anemia.
Dr. Paul D. White, Boston Coronary Diseases.
Dr. Albert Graeme Mitchell, Cincinnati Pediatrics.

OKLAHOMA

Personal—Dr. Lewis J. Moorman, Oklahoma City, has been appointed to the city medical staff as specialist in diseases of the chest.

Society News—Dr. Henry H. Turner, Oklahoma City, addressed the Garfield County Medical Society, September 24, on the endocrines. The Tulsa County Medical Society called a special meeting, October 12, to discuss the medical practice act. Dr. Leonard S. Willour, McAlester, secretary of the Oklahoma State Medical Association, introduced the new

executive secretary of the committee on public policy and legislation, state medical association, Mr Jess Harper Other speakers were Drs McLan Rogers, Clinton, and Henry K. Speed, Sayre

PENNSYLVANIA

Society News—Dr Arthur P Noyes, Norristown, addressed the Northampton County Medical Society in Allentown, October 13, on "Some Relations Between Psychiatry and Medicine." This was a joint meeting with the Lehigh and Bucks county medical societies and the Lehigh Valley Homeopathic Medical Society—An obstetric institute was conducted at the meeting of the Cambria County Medical Society, Johnstown, October 15, by Drs Josiah R. Eisaman, Charles E. Ziegler and William Paul Dodds, all of Pittsburgh—Dr Ralph E. Herendeen, New York, addressed the Lehigh County Medical Society, Allentown, September 8, on "What the General Practitioner Should Know of the Roentgen Therapy of Neoplasm"—Dr Ray P. Moyer, health officer of Pittsburgh, was elected president of the Pennsylvania Public Health Association at its twelfth annual meeting in Harrisburg in September

Philadelphia

Program of College of Physicians—Dr Thomas Parran, Surgeon General, U S Public Health Service, will deliver the James M. Anders Lecture of the College of Physicians of Philadelphia, November 4, on "Syphilis from the Public Health Point of View." The first lecture of the season, one of the Mary Scott Newbold Lectures, was delivered October 7, by Dr Thomas M. Rivers, New York, on "Virus Diseases of the Central Nervous System." Other lectures announced for the year are

- December 2, Mutter Lecture Dr George P. Muller The Relation of Benign Breast Lesions to Ovarian Dysfunction.
- January 6 Nathan Lewis Hatfield Lecture Dr David P. Barr St. Louis Parathyroids and Their Role in Health and Disease.
- February 3, Nathan Lewis Hatfield Lecture, Dr Leonard Colebrook London Control of Hemolytic Streptococcal Infection with Particular Reference to Puerperal Fever
- March 3 Nathan Lewis Hatfield Lecture Dr George H. Whipple Rochester N. Y. Hemoglobin and Plasma Protein Construction Within the Body as Influenced by Various Factors
- April 7 Mary Scott Newbold Lecture Dr Hector Mortimer Montreal Canada Significance of Cranial Lesions in Clinical Medicine
- May 5 Mary Scott Newbold Lecture Dr Alphonse R. Dochez New York, Agents of Upper Respiratory Infection

Society News—Drs John P. Scott and Samuel X. Radbill among others, addressed the Philadelphia Pediatric Society October 13, on "Streptococcus Meningitis with Recovery Following Mastoidectomy and the Use of Lyophilized Convalescent Scarlet Fever Serum Intraspinaly."—Among the speakers who addressed the Physiological Society of Philadelphia, October 19, were Drs Arthur M. Walker, Carl F. Schmidt, Kendall A. Elsom and Charles G. Johnston on "Renal Blood Flow and Creatinine Clearances of Unanesthetized Rabbits and Dogs as Influenced by Water, by Pituitrin and by Xanthine and Mercurial Diuretics."—Prevention of heart disease was the subject for the meeting of the Philadelphia County Medical Society, October 28. The speakers were Drs Edward Weiss on hypertension, Charles C. Wolferth, coronary artery disease, William D. Stroud, rheumatic heart disease and John H. Stokes, syphilitic heart disease.—At a meeting of the Philadelphia Neurological Society, October 23, Drs Joseph C. Yaskin and Karl Kornblum presented a paper on Neurological Aspects of Petrositis" and Dr Carl F. Schmidt, "Intrinsic Regulation of the Cerebral Circulation"—Drs Kenneth E. Appel and James A. Flaherty, among others, addressed the Philadelphia Psychiatric Society, October 3, on "Hormone Studies in Homosexuality"

RHODE ISLAND

Society News—Drs William P. Buffum, Providence, and John C. Corrigan, Fall River, Mass., addressed the Providence Medical Association October 5 on "The Role of House Dust in Bronchial Asthma" and "The Incidence and Management of Anemia of Pregnancy" respectively—The Washington County Medical Society was addressed at the Westerly Hospital, Westerly, October 14, by Dr Murray S. Danforth, Providence on "Injuries and Diseases of the Spine."—At the quarterly meeting of the Rhode Island Medical Society at Howard, September 3, the speakers were Drs Arthur H. Harrington, Providence, on "History of Treatment of the Insane in Rhode Island," Rawser P. Crank, Howard "Problems in the Neuropathology of Mental Disease," and Harold W. Williams formerly of Schenectady, N. Y. "Bedside Manners and Psychiatry"

TENNESSEE

Society News—Dr Thomas D. McKinney, Nashville, addressed the Davidson County Medical Society, Nashville, September 15, on "Surgery of the Sympathetic Nervous System"—Speakers at the first fall meeting of the Dyer, Lake and Crockett Counties Medical Society were Drs James E. Wilson Jr, Nashville, on "Trachoma in Dyer County", Maccenar B. Hendrix, Memphis, "Preoperative Treatment of Acute Abdominal Diseases", Edward Guy Campbell, Memphis, "Lobar Pneumonia," and Isaac G. Duncan, Memphis, "Hematuria."—Dr Josiah J. Ashby, Nashville, addressed the Giles County Medical Society, August 20, on "After-Treatment of Infantile Paralysis"—Drs John Marsh Frere and Jesse B. Swafford, Chattanooga, addressed the Hamilton County Medical Society, September 17, on "Diverticulum of the Cardiac End of the Stomach" and "General Paralysis of the Insane" respectively—Drs Lee K. Gibson and Edward T. West, Johnson City, addressed the Washington County Medical Society, September 3, on "Thyroid Diseases" and "Cancer of the Rectum and Sigmoid" respectively—Drs John C. King and William D. Tinson, Memphis, addressed the Memphis and Shelby County Medical Society, August 4, on "Management of Carcinoma of the Breast" and "Nonsurgical Treatment of Nasal Polyps" respectively

VERMONT

State Medical Election—Dr William G. Ricker, St. Johnsbury, was elected president of the Vermont State Medical Society at the annual meeting in Burlington, October 15. Dr Waldo J. Upton, Burlington, was made vice president and Dr Arthur B. Soule Jr, Burlington, secretary. Dr Ricker has been secretary for many years.

VIRGINIA

State Medical Election—Dr George F. Simpson, Purcellville, was chosen president-elect of the Medical Society of Virginia at its annual meeting in Staunton, October 14, and Dr James M. Hutcheson, Richmond, was installed as president. Vice presidents elected were Drs Joseph T. Buxton, Newport News, Hugh H. Trout, Roanoke, and Guy R. Fisher, Staunton. Miss Agnes V. Edwards, Richmond, was reelected executive secretary.

Health Educational Work—J. C. Funk, LL.B., formerly of the Pennsylvania State Department of Health, Harrisburg, and more recently with the U. S. Public Health Service, Washington, D. C., has been placed in charge of the educational work of the state department of health. The appointment has been made possible by an increased appropriation authorized by the last general assembly. Mr Funk will serve as a centralized information officer for the department, according to *Virginia Medical Monthly*.

WASHINGTON

Obstetrics and Gynecology Meeting—The Pacific Coast Society of Obstetrics and Gynecology will meet in Seattle November 11-14, with headquarters at the Olympic Hotel. The preliminary program lists the following speakers:

- Dr Paul G. Flotow Seattle The Superior Hypogastric Plexus and Its Relation to Gynecology (clinic)
- Dr Albert M. Vollmer San Francisco Results of Sympathectomy for Dysmenorrhea
- Dr Theodore W. Adams Portland Ore. Vesicovaginal Fistula
- Dr Donald G. Tollefson Los Angeles Uterine Inertia in the First Stage of Labor
- Dr Hans F. Schluter Sacramento The Fetal Heart
- Dr John W. Sherrick Oakland Cesarean Section in Private Practice
- Dr Lyle G. McNelle Los Angeles Diagnosis and Treatment of Abdominal Pregnancy
- Dr C. Frederick Fluhmann San Francisco Studies on Amenorrhea
- Dr Alice F. Maxwell San Francisco Hormones of Ovarian Tumors
- Dr Hans Von Geldern San Francisco Incidence of Carcinoma in the Fibroid Uterus
- Dr Bernard J. Hanley Los Angeles Breech Presentation
- Dr Albert L. Mathieu Portland, Ore., will conduct a symposium on hydatidiform mole and chorio-epithelioma.

WISCONSIN

Personal—Dr Stephen E. Gavin, Fond du Lac, who was installed as president of the State Medical Society of Wisconsin at the meeting in Madison in September, was honored at a testimonial dinner September 17 at St. Agnes Hospital, Fond du Lac, of which he is acting chief of staff. T. A. Hardgrove, DDS, was toastmaster, and numerous speakers paid tribute to Dr Gavin.—Dr Llewellyn R. Cole, assistant physician in the department of student health at the University of Wisconsin, Madison, has been appointed director to succeed Dr Charles E. Lyght, who has been made director of health.

at Carleton College, Northfield, Minn.—Dr Kenneth E Lemermer, Madison, has been promoted to be assistant professor of surgery at the University of Wisconsin Medical School

GENERAL

News of Epidemics—Twenty-one cases of typhoid in children with one death were reported in Astoria, L I, October 12 The cause had not been determined—Twenty-one active cases of infantile paralysis were reported in Toledo, Ohio, October 8 thirty-five cases have occurred this season. Several school grades were quarantined and about 300 children were under observation after having been exposed to the infection.—Eight persons have died in an outbreak of typhoid at Carlisle, Pa, it was reported October 12 It began with infection among road workers who are said to have drunk from a contaminated well—Seven inmates of the Columbus State Hospital, Columbus, Ohio, died in an outbreak of typhoid, the source of which remains undetermined, fifty others were still seriously ill September 28—The state health department of Tennessee announced October 7 that 283 cases of infantile paralysis had occurred in the state since the first of the year, all but five since July 1 There have been nineteen deaths

Meeting of Southwestern Association.—The twenty-third annual meeting of the Southwestern Medical Association, formerly the Medical and Surgical Association of the Southwest will be held at the Hotel Cortez in El Paso, November 19-21 There will be general assemblies, round table discussions and clinics, conducted by eight invited guests The guests and their subjects for the general assemblies are as follows

Dr Harold Brunn	San Francisco	Pelvic Appendicitis	Lobectomy
Dr Ralph A Kinsella	St Louis	Career of the Heart	Differential Diagnosis of Rheumatic Fever
Dr Isidore Cohn	New Orleans	Osteomyelitis	Fractures of the Upper Extremity
Dr Nelse F Ockerblad	Kansas City Mo	The Problem of Gross Blood in the Urine	Differential Diagnosis of Retroperitoneal Lesions
Dr James T Case	Chicago	Diagnostic Application of X Rays in Digestive Disorders	Roentgenology in the Diagnosis and Management of Biliary Tract Disorders
Dr Warren T Vaughan	Richmond Va	Newer Methods in the Diagnosis and Treatment of Food Allergy	How to Use and Interpret Laboratory Reports
Dr Thomas E Carmody	Denver	Relation of the Oral Cavity to Otolaryngology and General Medicine	Treatment of Diseases of Accessory Sinuses
Dr Willard R Cooke	Galveston Texas	The Relief of Pain in Labor	Metabolic Disturbances in Pregnancy

Dr James J Gorman, El Paso, is president of the association and Dr Chester R. Swackhamer, Superior, Ariz, president-elect

Society News—Dr Harry S Gradle, Chicago, was chosen president elect of the American Academy of Ophthalmology and Otolaryngology at the annual meeting in New York, October 1 Dr Lee Wallace Dean, St Louis, was installed as president, and the following were elected vice presidents Drs Bernard Samuels New York, Wilson Johnston, Portland Ore., and Frank L Ryerson, Detroit. Dr William P Wherry Omaha, was reelected executive secretary and treasurer The 1937 meeting will be in Detroit.—Dr Lucius C Kingman Providence, R I was elected president of the New England Surgical Association at its annual meeting in Bridgeport, Conn, September 25-26 Dr Walter G Phippen, Salem, Mass, was elected vice president and Dr John M Birnie Springfield, Mass., secretary The 1937 meeting will be held in Providence.—The Society of American Bacteriologists will hold its thirty eighth annual meeting at the Hotel Lincoln Indianapolis, December 28-30—Dr Frederic A Besley, Waukegan Ill., was chosen president elect of the American College of Surgeons at its annual election in Philadelphia, October 22, and Dr Eugene H Pool, New York, was installed as president. The college will hold its next annual meeting in Chicago, the week of October 25—Dr Harry J Corper, Denver, was elected president of the Rocky Mountain Tuberculosis Conference at its meeting in Albuquerque, N M September 28-29 Dr Charles A Thomas Tucson Ariz, was made vice president and Dr Arnold Minnig Denver, secretary The next meeting will be in Tucson in 1938—The annual roll call of the American Red Cross will be conducted from Armistice Day to Thanksgiving Day, November 26

CANADA

University News—Dr Robert G Inkster professor of anatomy, University of Manitoba Faculty of Medicine, Winnipeg, has been appointed university anatomist at Trinity College, Dublin Ireland—Dr Charles B Weld assistant professor of physiology University of Toronto Faculty of Medicine, has been appointed professor He was graduated in 1929 from Toronto

Faculty Changes at Toronto—The following appointments and promotions in the staff of the University of Toronto Faculty of Medicine have recently been announced

Guy F Marrian, Sc D	promoted to be professor of biochemistry	
Dr Thomas F Nicholson	promoted to be associate professor of pathologic chemistry	
Dr Dudley A Irwin	appointed associate professor of medical research	
Dr Milton H Brown	assistant professor of hygiene and preventive medicine	
Dr Herbert A Detweiler	assistant professor of medicine and clinical medicine	
Dr Thomas A J Duff	assistant professor of surgery	
Dr Wilbur R Franks	George E Hall and C C Lucas	assistant professors of medical research

Personal—Dr S Clarence Peterson, Winnipeg, has been appointed director of venereal disease control for British Columbia This department in the provincial health department is to be reorganized and the government has increased its appropriation from \$30,000 to \$45,000 Dr Peterson had a similar position in Manitoba and was also at the University of Manitoba Faculty of Medicine—Dr Stewart S Skinner has retired as chief medical officer of the Lancaster Hospital St John, N B under the department of pensions and national health Dr Henry D Reid, federal quarantine officer at Partridge Island, St John, succeeded him.

Government Services

Changes in Public Health Service

Drs William E McLellan and Henry L Peckham Jr have been appointed and commissioned as assistant surgeons in the regular corps of the public health service Drs Robert A Jones and Herbert R Collins have been appointed and commissioned as surgeon and passed assistant surgeon, respectively, in the reserve corps of the service

Hospitals for Indians

Construction will soon begin on a combination sanatorium and general hospital for the Indian Service, near Talihna, Okla, which, when completed, will have a capacity of 225 beds The project is being financed by a PWA allotment of \$947,900 The facilities will be used largely by Indians of southeastern Oklahoma, members of the Choctaw and Chickasaw Nations, but will be available also for other Indians of the Five Civilized Tribes and of other tribes resident within the state. Announcement is made also of an Indian sanatorium to be erected at Rapid City, S D with accommodations for about 115 patients This project will be maintained for Sioux Indians

R O T C Units in Medical Schools Reestablished

In accordance with an act of the Seventy-Fourth Congress, arrangements have been made for the reestablishment of R O T C units at the following medical schools

Baylor University College of Medicine	Dallas Texas
Boston University School of Medicine	Boston
University of California Medical School	San Francisco
Georgetown University School of Medicine	Washington D C
George Washington University School of Medicine	Washington D C
State University of Iowa College of Medicine	Iowa City
Jefferson Medical College	Philadelphia
University of Michigan Medical School	Ann Arbor Mich
University of Minnesota Medical School	Minneapolis
Ohio State University College of Medicine	Columbus Ohio
University of Oregon Medical School	Portland Ore
University of Pittsburgh School of Medicine	Pittsburgh
St Louis University School of Medicine	St Louis
University of Vermont College of Medicine	Burlington Vt
Medical College of Virginia	Richmond Va
Washington University School of Medicine	St Louis
Western Reserve University School of Medicine	Cleveland
Syracuse University College of Medicine	Syracuse N Y
University of Pennsylvania School of Medicine	Philadelphia

Next year the remainder of the thirty-one units authorized by the war department will be organized In compliance with the National Defense Act of 1920, R O T C units were established in twenty-four class A medical schools between 1920 and 1922 Their purpose was to train medical students for medicomilitary duties and to prepare them for commissions in the medical reserve corps As a result more than 6000 medical graduates were so trained and commissioned and in the course of time have constituted more than 50 per cent of the yearly additions to the medical reserve corps In 1931 and for three succeeding years the army appropriations acts carried the provision that eventually legislated the medical department R O T C units out of existence, so that in June 1935 the last classes were graduated and commissioned.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 19, 1936

The Strain of Modern Civilization

Lord Horder opened the discussion on the subject, the Strain of Modern Civilization, before a large audience in the section of physiology of the annual meeting of the British Association for the Advancement of Science. He said that from the early days of the primitive curse life had always imposed a strain on mankind. That was the penalty we paid for living at all. There was, however, implicit in the title of the discussion the suggestion that the stress of modern life had new elements and was excessive. Clinical observation undoubtedly revealed the effects of strain. Functional diseases, as against organic, had increased, whether in the field of the nervous system proper, the heart and blood vessels, or in that of the internal secreting glands. Behind the screen of headache, indigestion and fatigue inquiry revealed the anxiety factor. In the sphere of microbic diseases we had new diseases for old. There was an increase of those more subtle germ diseases called "subinfections," in which the virulence of the microbe was low while the susceptibility of the host was high. In many of these the germ came from within and not from without.

As to the cause, it was almost platitudinous to speak of the anxiety connected with the competition of living and the equally grave sense of international insecurity, of the pace at which we lived and of the precariousness of life itself in the streets so that we seemed to live by accident rather than to die by it, of the monotony and drabness inherent in the long hours of physical and mental effort of many workers, of the exciting nature of our amusements, and of noise, needless, stupid, provocative. He would add another cause, more subtle but none the less recognizable, the slackening of the moral code in the sphere of increased freedom of both sexes.

THE VALUE OF SCIENCE

There was a notion afoot that in the last analysis science was largely responsible for much of the strain of modern life. This unloading on science he regarded as a mere pusillanimity. It was not too much science but too little science that had helped to get us into this trouble. Science had loaded man with benefits, but he had shown a carelessness and a prodigality in their use which was pathetic. One need not drive a car so fast that it killed nor make a loud speaker so loud that it deafened.

Among the remedies for the ill effects of the strain of modern life he placed, first, more science and especially science directed toward the study and development of the mind and spirit of man. We should guard and support all those amenities which were in existence or struggling on behalf of the artisan, the laborer, the shopman, the housewife—slum clearance, playing fields, national parks, pictures, music, museums, libraries, and quiet for the brain worker and others.

THE DANGER TO CIVILIZATION

It is seldom that a physician makes a political pronouncement, and however eminent he might be one from such a source would not receive much attention. However, what Lord Horder said has received widespread notice in the press. He saw little hope for the people through mass movements whether Fascist or Communist. When individual freedom had been sacrificed he saw no chance of achieving that control in the spiritual sphere through which he believed salvation could come to the human race. What matter the color of men's shirts if these were soon to be their shrouds? A plague on both your blouses, he said to the accompaniment of cheers. Concerning

numbers, he was much more interested in the quality than the quantity of our people. When the clash came, if come it must, between two hordes of the new barbarians—civilized barbarians if they liked—it might well be that the salvaging of the world or its doom might depend on whether northern and western Europe and America had been able to preserve an individualized society or, like the two opposed masses in the dictator countries, had yielded to the tremendous pressure of what might prove to be a bastard civilization and had caught the infection of despair. If our own individualities refused to be tub thumped or intimidated into a pulp, all might be well. He had not attempted prognosis. He could only state his faith in the individual and in the enormous potentialities of the human spirit. Was it not a handful of individuals who guided the vast experiment proceeding in the east of Europe, another handful that drilled humanity in the center, and one individual alone who balanced himself dramatically as on a tight rope before the breathless crowd of the South? If physicians had a political color, like lawyers, it must needs be Liberal. A rebirth of that spirit in British political life would be one of the best medicines that our strained lives could have administered to them.

Overworked Hospital Nurses

In a long correspondence in the *Times*, attention is drawn to the unsatisfactory conditions under which many hospital nurses work. The hours are long, with only short periods of rest. As they are standing most of the time, the physical strain must be great. The *Times* itself has joined in the discussion in an editorial in which it is claimed that nurses should have more, not less, leisure than ward maids, also that the pay of many nurses, amounting to no more than 24 cents a day, is quite inadequate. The father of a nurse complains that the wage of a responsible nurse endowed with technical knowledge, skill and initiative is little more than that of the ward maid. Many nurses are exceptionally well educated. Had they chosen other callings they would not have to do menial work that is allotted to some probationers. They take nursing for the love of it and this should not be made an instrument for their exploitation. A surgeon says that when probationers or junior nurses break down it is because their work must be combined with exhausting study. A registered nurse writes that every student nurse should have at least one day a week free from study and ward work. The mother of a probationer who broke down after eight months' training in one of the London hospitals complains that probationers work for seventy hours a week in the wards, on their feet practically the whole time, and sometimes for six hours on end with only ten minutes break. Study on the top of this arduous work may be "the last straw," and even without it probationers would be liable to break down. The suggestion has been made that much of the work done by hospital nurses, such as cleaning, sewing, fetching and carrying and ordinary waiting on patients, might be handed over to ward maids and so lighten their labor.

Radiotherapy in Cancer of the Cervix

At the Edinburgh Obstetric Society Sir Comyns Berkeley, who is director of the radium center of the London County Council, to which all cases are sent for radiotherapy from all the municipal hospitals of London, said that the results of radiotherapy in cancer of the uterus were not so good as they should be, because early diagnosis was the exception. The patients did not come to the surgeon or radiologist earlier because pain was a late symptom and in the nodular variety of cancer of the cervix bleeding was a late symptom. They were usually responsible for the delay but in a proportion of cases the physician neglected to make a vaginal examination and diagnosed the bleeding as due to the menopause. Women should be taught the great importance of taking advice for any irregularity of menstruation and insisting on an internal

examination When the physician found that an erosion of the cervix did not clear up quickly he should take the necessary steps to exclude cancer

Sir Comyns Berkeley followed the Stockholm radium technic and during 1934 and 1935 supplemented it with x-ray treatment The absolute survival rate for five years of the patients treated from 1928 to 1930 was as follows stage 1, 50 per cent, stage 2, 19 per cent, stage 3, 14 per cent, stage 4, 5 per cent The results are worse than those obtained at some centers but the cases treated were also worse, being drawn from the infirmary class Many patients in stage 4 obtained great relief from their sufferings and the majority some relief When they died, they did so as a rule from internal metastases, a death which was far less distressing than if the growth were spreading locally with all the horrors of foul discharges, continuous bleeding, and in some cases escape of urine and feces from holes in the bladder and rectum Moreover, it occasionally happened that cases treated with the idea of palliation and cases incompletely treated were cured.

In the radium treatment a general anesthetic should always be given, because it enabled a more detailed examination to be made. Efficient application, even with a multiplicity of applicators, was by no means always easy Whether x-rays should supplement radium was still disputed The radium bomb had a definite place in extensive cases Reliable statistics of the results were still needed and could be obtained only by an efficient follow-up system A bimanual examination did not always indicate the real amount of spread, for example, to the bladder On the other hand, parametrial masses, suggesting malignant extension, often proved to be inflammatory

PARIS

(From Our Regular Correspondent)

Sept 19, 1936

A New Cabinet Position—Secretary of Leisure

Not only has the passage of recent laws to improve social conditions in France and its colonies resulted in increased wages and a forty hour week for workers, but every employer is now obliged to grant a vacation, with full pay, of one week for those who have been in his employ for less than a year, and two weeks for those employed over a year The Socialists and Communists together have constituted a majority in the legislature since May 1936 and have created a cabinet position known as a "secretary of leisure," whose duty it shall be to encourage physical education and to aid the workers to spend to the greatest advantage their nonemployed time and especially their paid vacation periods Information is provided as to where to go, at all seasons of the year, and special railroad or bus round trip rates in all directions, even to foreign countries, are arranged for G Lavalee in the *Concours médical*, May 27, suggests to the "secretary of leisure" that sport competitions, theaters which follow provincial circuits, and increased use of the radio are not innovations but that a serious effort should be made to supervise the omnipresent saloon lest the leisure hours be spent there. At least one or two thousand saloons ought to be suppressed to prevent the free Saturdays and Sundays being passed there by the worker

As to the radio improvements, few of the younger generation will be content to sit all the afternoon to listen to a radio program.

Opposition to Forced Retirement Law for Physicians

In a recent letter it was stated that a bill, termed the "Pomaret law," had been introduced in the French legislature according to which the members of all professions will be obliged to surrender their diplomas at the age of 65 and discontinue their work without any recompense in the form of a pension from the state. Violent opposition to such a proposal

is appearing from all sides, and a medical journalist said that he would be eligible for retirement in three months and then either be ready for the soup line by 1939 or be obliged, like so many unemployed here in Paris, to earn a living by singing in the streets Maurice Mordagne, the leader of the medical students' union, quotes such a letter received by him, in an article in the August 22 *Presse médicale*, which reflects the reaction of the professors and medical journalists on the forced retirement bill As to the faculties, Professor Villard of Montpellier is quoted as saying that the medical profession in France does not seem to have awakened to the potential dangers of such a bill if passed Many physicians would be obliged either to die of hunger or seek asylum in a charitable institution Another professor of the Paris medical school who is familiar with conditions in smaller communities states that the applications of such a law would give temporary relief in an overcrowded profession only if some measures were adopted to reduce materially the numbers of licenses to practice granted annually Professor Sergent stated that every effort must be made to fight against the dangers of state medicine, which threatens to reestablish the serfdom suppressed by the French Revolution.

The proposed law would affect not only members of the technical (physicians, dentists, architects, engineers) but also those of nontechnical professions (teachers in liberal arts) hence Professor Fedel of one of the high schools is quoted as saying that many discoveries have been made by men and women above the age of 65 The campaign to retire such individuals without pension at that age is being led by ignorant opportunists and recently naturalized foreigners Why not apply such a law to holders of public offices, many of whom have rendered the state invaluable service after the age of 65? Many physicians even at 70 are still active and in possession of all their faculties, thus rendering indispensable aid by their advice, gained through many years of experience, to younger colleagues Professor Faure, gynecologist, cited instance after instance of men of 70 or over who were a contradiction of the statement made by the supporters of the bill that a surgeon ought not to operate after the age of 65

The syndicat (union) of physicians in the department of the Seine has recently studied the records of 100 foreign students and physicians during a period of four months and found that the majority of those who applied for naturalization and permission to practice were granted these demands by the government It would appear more necessary to subject such applications to a stricter control than to try to force retirement of older men. The latter, if the bill passes the legislature would not help young graduates born in France or its colonies as much as it would the recent influx of foreigners

Antidiphtheria Immunization of Medical Students

At the July 21 meeting of the Académie de médecine, Robert Clement made a plea for the routine examination of medical students by the Schick test and subsequent immunization with the Ramon anatoxin of all those showing a positive reaction. He quoted some statistics gathered by Azoulay in 1935 showing that, from 1923 to 1934, 224 cases of diphtheria had been treated in the nursing staff and personnel of four Paris public hospitals

In the School for Public Hospital Nurses, since 1926, every pupil nurse has been given the Schick test and immunized if this has been found positive This has so far not been applied to the nonnursing personnel, but it would seem advisable to subject them to the test. Up to the present time, no effort has been made to look for receptive individuals among medical students This is a loophole that ought to be given immediate attention, so far as diphtheria is concerned, just as all first year students are given tests to determine their receptivity to tuberculosis

Certain borderline Schick reactions present a difficult problem and negative results have been observed in cases of diphtheria. In certain of these individuals the percentage of antitoxin in the serum is inferior to the dose of one thirtieth antitoxic unit, which is considered adequate as protection against diphtheria. It has been shown recently by Meersseman and Renard that the limit of negativity of the Schick reaction does not correspond to this classic protective figure and can even be considerably lower. Now, if the test is carried out with a dilution of 1:300 instead of 1:600 as recommended by the Pasteur Institute, a positive reaction will be found in many who have a negative result with the more dilute solution. A person ought to have an antitoxic serum content which is superior to one thirtieth unit instead of below it. Another way of avoiding errors in the Schick test is to use syringes and needles sterilized by dry heat and to wait until the fourth or fifth day before attempting to observe the reaction. By this time the protein reaction has disappeared, whereas the toxin reaction is at its maximum. It is a good rule to consider all reactions as positive when they are not strictly negative. With these precautions the Schick intradermoreaction has a genuine value for receptive subjects. In young medical students it is positive in about half of the cases.

The excellent results of preventive immunization following two or three subcutaneous injections of the Ramon anatoxin at intervals of three weeks is proved by the increased antitoxin content of the blood serum, a negative Schick reaction and the diminution in morbidity of vaccinated students.

Serious accidents following immunization are very rare and are due to specific sensitization of the individual.

In the discussion, Surgeon General Rouvillois of the army maintained that medical students ought to be immunized not only against diphtheria but also against typhoid and tetanus. This form of triple vaccination is now obligatory in the French army.

In closing the discussion, Clement stated that such a triple vaccination has been given to every child in his service at the Trousseau Hospital for the past three years. Every medical student ought to be given similar treatment.

BERLIN

(From Our Regular Correspondent)

Aug. 31, 1936

Treatment of Cancer in Women

Before the Medical Society of Freiburg-in-Breisgau, Professor Keller discussed the results obtained by the treatment used in carcinoma of the uterus at the Women's Clinic of Freiburg University from 1927 to 1933. Carcinoma of the cervix is treated almost exclusively by radium and roentgen irradiation. Although 62 per cent of the cases were operable surgical interventions were carried out in only 4 per cent, and in several instances only subsequent to radiotherapy. The treatment is generally a combination of irradiation with roentgen and radium rays, greater importance is attached to the latter. In addition the carcinoma must be locally eradicated, and the modern technic of dosage effects this without destruction of the adjacent tissue. This concept is opposed to that in vogue at this clinic during the administration of the late Professor Opitz. Opitz used relatively small doses in irradiation in order to protect the connective tissue and he considered this principle of great importance in combating cancer. The total radium dosage amounts to from 5,000 to 7,000 mg. element hours, two thirds of this amount representing intra-uterine and one third vaginal administrations. However the total dosage as well as the ratio of the intra-uterine to the vaginal dose is not inflexible but has been reckoned according to the conditions presented in individual cases. Thus if the situation warrants, only one third of the intra-uterine dosage

and two thirds of the vaginal dosage will be administered. The total dosage is estimated above all on the basis of the patient's age. For patients more than 60 years of age, the inferior limits of the total dosage are not overstepped. It is most favorable to apply the total dosage within three to four weeks. The best results are yielded by two irradiations with radium within a period of three weeks. If the dosage is administered in three or more stages, the danger of ascending infection will be increased. It is important that the entire tumor be submitted to thorough and uniform irradiation and that, to avoid injury, the rays be sufficiently filtered (secondary filtration with 2 mm., complete filtration with 3 mm. lead equivalence). Injuries to the rectum and bladder are carefully avoided since those organs are highly sensitive to the rays. The radium deposit is for the same reason kept at the greatest possible distance from the organs most endangered. Nine instances of damage were observable among 259 cases (four rectovaginal fistulas and five cystic ulcers). All the fistulas and four of the bladder injuries were presented in the years 1928 and 1929, at which time the secondary filtration was only 1 mm. of lead equivalence. Two radium irradiations according to the Seitz-Wintz method are administered and during the interval the right and left parametria are irradiated at two respective sessions with some 800 roentgens. During the latter procedure it is important that no overlapping of the ray cones should occur. On this account the cone of rays is directed toward the pelvic wall and a decrease in the incidence of recurrences in that region is thus obtained.

The primary mortality from radiotherapy amounted during the period under discussion to 3.5 per cent if only the fatalities directly traceable to the treatment are considered, the figure is 2.3 per cent. Of the 259 observed cases the records of 142 cases of the years 1927-1930 are available for estimate as to permanence of cure. Of these 142 cases, 32.4 per cent are considered permanently cured. With improvement of the therapeutic technic the results become more satisfactory. The proportion of healed cases in 1927, 20 per cent, stands in contrast to the corresponding figure for 1930, 45 per cent. Radiotherapy is rejected in the treatment of carcinoma of the corpus uteri and operative treatment indicated as the method of choice. Whereas elsewhere six carcinomas of the corpus were observed among 100 cases of uterine cancer, the Freiburg material showed that in 30 per cent of all cases of uterine carcinoma the disease was located in the corpus. Of thirty-five cases of corpus carcinoma observed during the period 1927-1930, 91 per cent were operable and in 60 per cent permanent cure was achieved. Radiotherapy was employed in seventeen of these thirty-five cases (in part because of general inoperability). Of these seventeen patients, only five were still living at the end of five years, whereas, of the eighteen submitted to operative treatment, sixteen were still alive after five years. Apart from the local therapy, general restorative treatment was carried on simultaneously; this procedure is regarded as essential to the permanence of successful results.

New Regulations of Dentistry

According to a public announcement by the minister of the interior of the results of group examinations of persons of various ages, and the observations of the sick insurance societies, the health of the German people is being seriously imperiled by a formidable spread of dental diseases. Under these circumstances the care of the people's teeth by both dental physicians (zahnärzte) and so-called dentists (dentisten) has taken on a greater significance. As an initial step to eradicate professional deficiencies, the overcrowded state of the two groups, namely, the zahnärzte and the dentisten, is being combated. The dentisten are those persons who despite their lack of a regular university training, are engaged in the practice of dentistry. Members of this group are graduates of a 'dentist's

school' but their education is far from complete and they are not dental physicians (zahnärzte). For these reasons the admission of new students to the regular dental schools has been for the first time temporarily stopped. Since the educational requirements of the dentisten have not yet been legally regulated, only those persons shall henceforward be permitted to take the public examination for dentisten who are at present preparing themselves for admission to that professional group. So for the time being the admission to training schools for dentisten has also been stopped. (The calling of dental mechanic [zahnmechaniker] is not affected by these measures, these technicians are only assistants to the dental physicians by whom they are employed to do the mechanical work.)

Attention had been called previously to the fact that the health of the German people may be seriously impaired by the spread of dental disorders. The prevalence of such disorders has been evidenced by the results of physical examinations in the defense forces. According to these observations 14.86 of each hundred men examined were designated as "fit on condition" because of "bad teeth." On the basis of these examinations, together with the finding that of 558 apprentices in a South German industrial establishment only 7.5 per cent did not stand in need of dental care, Dr. Kientopf, director of the Berlin Municipal School Dental Clinic, a man who formerly occupied an influential position in the public health councils of National Socialism, has demanded that a program of compulsory treatment of dental, oral and maxillary disorders be instituted. The customary examinations by the school physician are distinctly inadequate, since they take place at too widely separated intervals and because the school doctor is in no position to carry out a comprehensive program of dental care among school children.

Attention is finally called to the great importance attributed to suitable bread nutriment. The newly founded cooperative association and the dental institute of the University of Berlin set forth as the objective that by means of an adequate nutrition accessible to the entire population the internal causes of dental caries be reduced to a minimum.

Professor Flössner called to mind in this connection that in Germany 40 per cent of the necessary nutrition was supplied by bread and flour. The controversial question "Should wheat bread or rye bread constitute the bread nutriment?" no longer exists, since no important physiologic-chemical differences between the two types can be distinguished. Science is today concerned with another problem, that of the degree of milling to which grain should be submitted, for it is assumed that a causal relationship between a certain group of diseases (including caries) and insufficiently milled flour can be established.

Dr. Kraft pointed out that whole grain bread because of its content of protein, vitamins, cellulose and mineral substances represents a food of the highest nutritive value. The dietetic physiologist Professor Scheunert of Leipzig spoke of the importance of the vitamin content of bread. That the population may be amply supplied with vitamin B₁, the largest possible supply of whole grain bread, or at least of a black bread in which 82 per cent of the grain has been utilized, is recommended. If the regimen is sufficiently varied and comprises vegetables, fruit, milk, eggs and so on, deficiency in vitamin B₁ could scarcely be present. According to Scheunert's most recent research, only bread that represents the greatest possible utilization of the grain, in quantities of from 300 to 400 Gm. daily, can supply the day to day need for vitamin B₁. If gray bread or white bread is eaten, a considerable part of the vitamin B₁ need must be supplied by other types of food.

Professor Euler, director of the dental institute of the University of Breslau furnished most illuminating communications on the interrelation of the nutrition of the mother and the teeth of the infant. Children were 95 per cent free from caries if

during pregnancy, their mothers had consumed generous quantities of fresh green vegetables, salads, fruits, tomatoes, carrots and raw sauerkraut.

The Admission of Children to Tuberculosis Sanatoriums

The National Antituberculosis Commission has issued suggestions with regard to the admission of child patients to the tuberculosis sanatoriums. The substance of these guiding principles was as follows. The initiation of therapeutic measures for child patients has heretofore for the most part not been carried on as conscientiously as the welfare of the state and of the individual child demand. The number of active cases of childhood tuberculosis, that is, those cases in need of treatment, is not so large as the number of children selected for treatment might lead one to believe. Unfortunately, even in medical circles, the idea has as yet not sufficiently been accepted that tuberculous infection in childhood, with the exception of the first four years of life, is not equivalent to the disease tuberculosis. An inaccurate diagnosis of "tuberculosis" may set a lifelong stigma on the child and, further, public funds are dissipated in unnecessary therapeutic procedures, funds that otherwise might be better used for the physical training of a greater number of healthy sound children on the one hand, and for the care of the truly sick on the other. It still happens today that certain constitutional phenomena are evaluated as the manifestations of tuberculosis and sanatorium care provided when actually contraindicated.

It happens repeatedly that a child termed "in danger of tuberculosis" is admitted to a sanatorium for treatment. But a child is imperiled only if he lives in the vicinity of an openly tuberculous person. Danger of this sort will not be removed from a child by confining him for two or three months in a sanatorium and then returning him to the same perilous surroundings. No good can come of such "precautionary measures." One thing alone will remove the peril in these cases and that is the exclusion of the source of infection, the child should be removed from the vicinity of the person capable of transmitting tuberculous infection, even if this means a permanent separation of the child from his normal surroundings.

ITALY

(From Our Regular Correspondent)

Aug. 31, 1936

Complications of Tonsillitis

Professor Chini of Rome, in a lecture before the Accademia Medica of Rome, made a study of the type of focal reactions that develop in patients suffering from several diseases, especially renal and articular complications of tonsillitis. Although the reactions can be nonspecific, they are of importance. They seem to be caused by superimposed diseases, which can explain the satisfactory results of tonsillectomy. In discussing Professor Chini's article, Professor Giudiceandrea said that probably the blood has a particular type of lability to the virus of pathologic tonsils, which lability seems to be proved by the fact that blood can present an agranulocytotic syndrome in the course of tonsillitis or act as a vehicle for the transportation of bacteria from the tonsils to the organs.

Professor Pontano emphasized the importance of the clinical and bacteriologic differentiation between rheumatic fever and articular localizations of streptococcal infections. The clinical criteria for a differentiation are based on the results of the administration of salicylates and on the presence of endocarditis. The speaker reported results of research that consisted in taking blood cultures in patients suffering from tonsillitis and from true rheumatism. In the latter cases the blood cultures are negative. The streptococcal infection of tonsillar origin causes

clinical symptoms of the organs and joints, especially the latter, and the kidney. The reason for a selective location of a tonsillar streptococcus is unknown. The occurrence of renal and articular complications of tonsillitis can be neither suspected nor prevented. The streptococcal infection can propagate itself through the blood to the meninges or the peritoneum, such as is the case in convalescents from scarlet fever, without any indications of predisposition of the involved organ. The speaker pointed out the advantages of the administration of salicylates in the course of tonsillitis for preventing the development of rheumatism as well as the value of repeated vaccinations in treating recurrent tonsillitis. Tonsillectomy should be complete in order to be satisfactory. Otherwise tonsillar stumps become the harbor of abundant bacteria. Professor Chini called attention to the fact that certain nonrheumatic pathologic conditions of tonsillar origin react favorably to salicylates, whereas certain cases of rheumatic fever do not. In his practice he found cardiac changes, shown by the electrocardiograms in some cases of simple tonsillitis without rheumatic complications. The indications of tonsillectomy are not general, he said, but depend on the relation between the pathologic condition in the tonsils and the disease at a distance from the tonsils.

Cancrocirrhosis of Lung

Professor Jona, in a recent lecture before the Società Medico-Chirurgica of Venice, reported a case of cancer of the upper lobe of the lung, in association with intense cirrhosis of the parenchyma of all the rest of the organ, and complete adhesive pleuritis. There were no metastases. The disease lasted for two years. It appeared in association with a mediastinal syndrome. The diagnosis of cancer of the lung was made early. It was proved that cancer developed before cirrhosis did. The speaker stated that this type of cancer of the lung is not rare and suggests giving it the name of cancrocirrhosis of the lung. The condition is not entirely analogous to cancer cirrhosis of the liver. The disease causes deformation and complete shrinkage of the lung, pachypleuritis, cirrhosis of all the lung parenchyma except at the small area of cancer, and intense histologic changes with the typical picture of lung sclerosis. The clinical signs and symptoms of the disease are retraction of the thorax on the side involved and general symptoms. There are signs of pleural thickening but no pleurisy. As a rule, the disease produces neither cachexia nor metastases. The knowledge of this new variety of cancer of the lung clarifies the subject of lung cancer and facilitates the making of an early diagnosis of the disease.

Surgery in Military Hospitals

According to statistics recently published by the Central Office of Sanitation of the Italian Army, 5757 operations were performed in Italian military hospitals during 1935 on the cranium, thorax, abdomen and extremities. The operations most frequently performed were those on the abdominal wall, especially for hernia. The annual frequency of cases of hernia in soldiers is about 1,500 cases. In about 1,000 of the cases soldiers request an operation. Soldiers in the remaining groups prefer to be dismissed. The number of appendectomies performed during the year was 1,101, with twenty-two deaths. The number of operations in mastoiditis was 256, with fourteen deaths. The number of operations on the eyes, adnexa and orbital cavity was 388, including seventeen enucleations and three eviscerations of the eye. The operating rooms of military hospitals were remodeled. The training of military surgeons was given great attention. Postgraduate courses in surgery for military surgeons are given at the clinics of Italian universities. The best of the modern methods for examination and for medical and surgical treatment of patients is now in use at military hospitals.

Italian Medical Journals

The *Sindacato Nazionale dei Medici* is approaching the problem of improving the nature of Italian medical journals. A meeting was recently held, attended by representatives of the ministry of corporations, of the confederations of artists and professionals, and of journalists. A motion to organize a scientific society as a branch of the national syndicate of journalists was accepted. Members of the society will be editors of nonpolitical journals. The first task of the society will be to make a classification of all scientific journals. Those of lesser importance will be either discontinued or incorporated into others of greater value in the same field.

BELGIUM

(From Our Regular Correspondent)

Aug. 5, 1936

Nonamebic Ulcerative Colitis

At the International Congress on Gastro-Enterology, held at Brussels, a thorough discussion of severe nonamebic colitis was presented by Messrs. Gallart Mones of Barcelona, Snapper of Amsterdam, Vimtrup of Copenhagen and Donati of Milan. Donati advocated medical treatment for the majority of cases of severe nonamebic colitis. Surgical intervention is reserved for cases that are refractive to medical therapy. Interventions are of two kinds: indirect, for the treatment of "foci" presumed or established as the source of the colitis, and direct intervention in the diseased colon. The indirect surgery may concern the mouth and the teeth, the stomach and duodenum, the appendix, the colon proper, the rectum, the peritoneum, the gallbladder, the uterus and its appendages and the urinary organs. Direct surgical interventions that can be performed for a developing colitis are (1) enterostomies, among which appendicostomy occupies an important place, (2) intestinal anastomoses and exclusions, and (3) colonic resections (partial colectomies). Numerous complications and sequels of colitis lie within the scope of surgical intervention. The technic of intervention does not permit of special rules. The most important problem concerned is the selection of the proper operative procedure. The advisability of an operation in several stages should be considered, especially when it is a question of partial colectomies. Operation in multiple stages is the procedure of choice excepting in case of right colectomies, for which the one stage intervention should be selected whenever that method appears to be possible.

An Obscure Epidemic of Weil's Disease

Messrs. P. Nélis and F. van den Branden have had published by the International Bureau of Public Hygiene a monograph on epidemic icterus catarrhalis (Weil's disease). While one of these men was performing antidiphtheritic inoculations with anatoxin among the educational centers maintained by the National Child Welfare Service, a dozen cases of Weil's disease broke out in one center. Nélis and van den Branden undertook to study the problem. A summary of the data elucidated by them and of the conclusions at which they arrived forms the substance of this note.

Weil's disease is rare in Belgium, but isolated cases were encountered at Ghent in 1920 and at Brussels in 1934. In 1932 Bessemans and Thiry examined eighty-four sewer rats and found 31 per cent of the animals to be hosts of *Spirochaeta icterohaemorrhagiae*. The incidence of the disease is greater in the Netherlands, where in 1932 207 cases were reported, sixteen of which were fatal. At that time, it should be noted, 60 per cent of the rats examined were found to be infected. At the educational center that was the scene of the Belgian outbreak, the authors were unable to capture a single rat. In fact, there appeared to be none in the vicinity. The drinking

water, on repeated chemical and bacteriologic analysis, was found to be excellent. The presence of the leptospira could not be detected even after several months of culturing with the Korthof medium. The authors at length concluded that neither the spirochetes of Inada and Ido nor a paratyphoid infection could cause Weil's disease.

The literature mentions two epidemics of icterus in which the patients, although free from leptospira, were found to be harboring paratyphoid bacilli. The one, reported by Cantacuzène, occurred in the Rumanian army, the other, reported by Angstein, took place in Poland.

G Dandi describes an epidemic at Novara, Italy, in May 1932 in which the disease was so mild that it was not necessary to hospitalize the patients. The negative character of the laboratory observations led the author to term the infection a benign icterus of unknown origin. The epidemic of Weil's disease observed in Belgium must also be classed among that numerous family of obscure icteruses.

Mental Disturbances in Carbon Monoxide Poisoning

Vermeulen, discussing the psychic manifestations in the victims of carbon monoxide intoxication before the Belgian Society of Forensic Medicine, says that cases necessitating commitment are rare. The principal symptom in these cases is mental confusion, thus may assume a simple form with disorientation in time and space or it may be complicated by hallucinations, anxiety and even symptoms resembling those of dementia paralytica. Another important symptom which, however, is not necessarily present, is amnesia—anterograde, retrograde or lacunar. The patient is frequently given to confabulation, conjuring up fictitious events to explain his predicament. Childish pathologic behavior is markedly present in a majority of the patients. In some instances a syndrome is observed analogous to that produced by lesions of the corpus striatum, and this may take the form of pseudoparkinsonism. Other conditions that may follow the intoxication are aphasia, apraxia and in some instances even a definitive toxic dementia. Vermeulen analyzes a group of clinical cases, calling attention to the diverse peculiarities of the disturbances. He speaks of the complete mental murtias, of the diagnostic problem in cases that resemble senile dementia, of delayed cases in which the symptoms appear sometimes a month subsequent to severe intoxication.

BUDAPEST

(From Our Regular Correspondent)

Sept 1, 1936

The Spread of Echinococcus in Hungary

Dr N Czirer analyzed all the cases of echinococcus observed in the Hungarian surgical clinics from 1917 to 1927 and found that echinococcal infection accounted for 0.2 per cent of the total. Among 13,087 persons examined post mortem at the Budapest St. Stephan Hospital echinococcal cysts were seen in only sixteen instances, whereas in 10,847 autopsies at the provincial hospitals, twenty-six cases were found. Moreover, some of those found at the Budapest hospitals were from the country. Surveying the echinococcus statistics of all Europe, Drs Lörincz and Bodrogi of Budapest came to the conclusion that human infestation is not more prevalent in Hungary than in countries west of Hungary. Certainly conditions are better than in Yugoslavia, Dalmatia, Bulgaria, Greece or Turkey. Nevertheless, they think that it would be advisable to take strong measures against the echinococcus.

According to the statement of responsible Turkish authorities the rate of infection is considerably higher there than in any of the western countries. In Bulgaria Dikoff studied the conditions in Sofia and states that in 9,770 postmortem examinations between 1900 and 1908 the echinococcus was the cause

of death in forty eight patients, or 0.49 per cent. In 1922 out of 780 autopsies, death in seven cases was found to be due to echinococcus. R. Peicic has collected the cases in Yugoslavia during the latter ten years and found 921 cases, including 241 from Bosnia and South Serbia. Slavonia, northeastern Croatia and northwestern Bosnia appear to be immune, and this distribution Peicic associates with the distance from Greece, which he regards as one of the most infected of European countries. As to Rumania, no authentic data are at hand, but so much is sure that the disease is not rare, particularly in the old kingdom of Rumania, Moldova and the Dobruja.

Graduate Teaching in Budapest

Graduate medical teaching is no longer a national affair in Hungary. In recent years about one third of those taking courses have been foreigners, the surgical, obstetric and urologic clinics of Budapest having been a special attraction. To meet the requirements of our own physicians, in view of the difficult financial and economic conditions that have prevailed in Hungary, the Central Board of Postgraduate Teaching has resolved to arrange courses in the larger provincial centers, as well as in Budapest. Physicians who could not afford to take the courses in Budapest could attend courses at provincial centers near their homes. Those who could not afford to take the courses without help and could not get subsidies from their local authorities or other sources have been provided with free board in the Physicians' House in Budapest, while others got board at the same place at a much reduced rate. The central board also made daily allowances in certain cases and even paid the locum tenens fees. The board gave leave to those holding official positions for the duration of the courses, which have been entirely free for them, 5 pengo only (about a dollar and a half) being paid as the registration fee. The courses lasted, respectively, for a fortnight and a month. Some of the Budapest clinics gave tuition to graduate students during the whole of the academic year. This year new courses have been established in maternal and child welfare work. Another new feature was the course on the management of public health institutions for medical superintendents. The subjects dealt with included hospital construction and management, medical technic, institutional feeding and laundry work.

The Regulation of Dental Practice in Yugoslavia

A new law definitely settles the troublesome question of dental practice by declaring that dentistry can be carried on by duly qualified doctors or dental technicians who have specialized in stomatology. Those dental technicians who gained their right to practice before 1932 may continue their work without disturbance. Those whose license was not recognized by the revision in 1935, if over 42 years of age, will have to pass qualifying examinations in December 1936, while those under 42 will have to attend regular courses, lasting six months, in dental technic and pass the final examination. Only those technicians are justified in applying for admission to the courses who before 1932 had already five years of practice (two years as apprentices and three years as assistants in laboratories). Those who have passed a matriculation examination in a secondary school and attended some foreign high school for dentistry and obtained a diploma after four years of study may carry on dental practice in Yugoslavia without further notice. Dental technicians and also dental surgeons are not allowed more than one consulting room.

Diathermy machines, quartz-light lamps, therapeutic short-wave sets and x-ray apparatus may be owned and used by qualified physicians only. Likewise, electrolysis and electrocauterization should be applied by physicians, and this exclusively medical work must not be done by barbers, masseurs, manicurists, chiropodists or cosmetic institutes.

Marriages

WILLIAM HUME HOSKINS, Venice, Fla., to Miss Elizabeth Braxton Henry Watson of Richmond, Va., August 22

WILLIAM EARL OVERCASH, Southern Pines N. C., to Miss Marjorie Skinner of Elizabeth City, August 8

WILLIAM ANGLE YOUNG, Roanoke, Va., to Miss Margaret Maie Owens of Richmond, August 15

WASHINGTON C. WINN, Keyesville, N. C., to Miss Harriet Irene Nance in Asheville, August 29

A LAFAYETTE STRATFORD to Miss Cary Valentine Cutchins, both of Richmond, Va., August 7

MUNFORD RADFORD YATES of Lynchburg, Va. to Miss Frances Jones of Petersburg, August 15

CHARLES WHITFIELD GASKINS to Miss Ruth Chunn, both of Asheville, N. C., in August

SAMUEL WEINSTEIN to Miss Hollis Hayward Young, both of Richmond, Va., August 2

ROBIN MILES OVERSTREET, Portland, Ore., to Miss Laura McGinty of Atlanta in July

HAROLD GIFFORD JR. to Miss Mary Elizabeth Jonas, both of Omaha, August 11

JOSEPH F. GRIGGS to Miss Jeanette Speiden, both of Tacoma, Wash., August 8

Deaths

J. Leslie Davis, Philadelphia, Jefferson Medical College of Philadelphia, 1901, member of the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, associate in laryngology at his alma mater from 1906 to 1909 and professor of laryngology at the University of Pennsylvania Graduate School of Medicine in 1919 and 1920 consulting otolaryngologist to the Pennsylvania Institution for the Deaf on the staffs of St. Mary's Hospital from 1903 to 1910, Philadelphia Lying-In Hospital from 1910 to 1925 and St. Agnes Hospital from 1915 to 1925, for many years trustee to the Philadelphia Free Library and the Philadelphia College of Pharmacy, made various contributions to the literature on otolaryngology, aged 63 died, August 1, in the Jefferson Hospital, of carcinoma of the sigmoid colon with metastasis to the ileum

James William Leech, Providence, R. I. University of Pennsylvania Department of Medicine, Philadelphia, 1904 for twenty years secretary of the Rhode Island Medical Society, member of the American Academy of Ophthalmology and Oto-Laryngology and the New England Ophthalmological Society fellow of the American College of Surgeons, past president of the Rhode Island Ophthalmological and Otolological Society surgeon, eye department, Rhode Island Hospital surgeon-in-chief eye department, Charles V. Chapin Hospital, consulting ophthalmologist to the Providence Lying-in Hospital Providence Memorial Hospital, Pawtucket, Westerly (R. I.) Hospital and consulting laryngologist to the Butler Hospital, aged 55, died suddenly, October 6, in the Jane Brown Memorial Hospital

George Oliver Sharrett, Cumberland, Md. Baltimore Medical College 1908, past president of the Medical and Chirurgical Faculty of Maryland and the Allegany-Garrett Counties Medical Society, member of the State Board of Medical Examiners member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological Rhinological and Otolological Society fellow of the American College of Surgeons member of the city board of health, served during the World War aged 49 consulting oculist and otolaryngologist to the Miners Hospital, Frostburg the Hazel McGilvery Hospital Meyersdale Pa. the Allegany Hospital and the Memorial Hospital, Cumberland, where he died, August 27 of coronary occlusion

Hugh Poteet Muir, Columbia, Mo., Harvard University Medical School, Boston 1922 member of the Missouri State Medical Association, at one time lecturer in physical diagnosis and at various times instructor in the departments of pathology, anatomy and medicine at the University of Missouri School of Medicine first resident physician at the University Hospitals city health officer aged 41 died, August 14 in the Bell Memorial Hospital Kansas City Kan., of tuberculous peritonitis

Russell Dean Robinson, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1914, served during the World War, on the staffs of the Roseland Community Hospital and the Little Company of Mary Hospital, physician to the Morgan Park Military Academy, aged 46, died, August 5, of injuries received when he fell from the roof of his home while repairing a radio aerial

John Allen Douglass, McDonald, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1896, member of the Medical Society of the State of Pennsylvania, served during the World War, for many years a member and at one time president of the borough council, on the staff of the Washington (Pa.) Hospital, aged 62, died, August 31, of carcinoma of the stomach and internal hemorrhage

William Lisenby Gray, Champaign, Ill., Keokuk (Iowa) Medical College, 1891, fellow of the American College of Surgeons, past president of the Champaign County Medical Society, for many years member and president of the board of education, formerly city health officer, aged 70, on the staff of the Burnham City Hospital, where he died, August 29 of a skull fracture received in a fall

John Schofield Eynon, Chester Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1911 past president of the Delaware County Medical Society, fellow of the American College of Surgeons, surgeon to the Chester Hospital and consulting surgeon to the Taylor Hospital, Ridley Park, aged 47 was killed, August 15, in an airplane accident at Brant Beach, N. J.

Thomas M. Parkins, Staunton, Va., College of Physicians and Surgeons, Baltimore, 1894, member of the Medical Society of Virginia, city health officer and city coroner, formerly secretary and treasurer of the Augusta County Medical Society, on the staff of the King's Daughters Hospital, aged 70 died, August 10, following injuries received in an automobile accident

Richard Booker Easley, Huntington, W. Va., Medical College of Virginia, Richmond, 1926, member of the West Virginia State Medical Association, served during the World War, chairman of the staff of the Memorial Hospital and member of the staff of St. Mary's Hospital aged 41, died, August 13, near Bellehaven, Va., of coronary disease

Frank Keith Meade, Hays, Kan., Rush Medical College, Chicago, 1902, member of the Associated Anesthetists of the United States and Canada, formerly secretary of the Central Kansas Medical Society, served during the World War, for many years on the staff of St. Anthony's Hospital, aged 61, died, August 2, of angina pectoris

Theodore William Scholtes, Munising, Mich., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901, past president of the Marquette Alger Counties Medical Society, city health officer and county coroner, on the staff of the Munising Hospital, aged 58, died, August 25, of heart disease

William Capell Duckworth, Jackson, Tenn., Vanderbilt University School of Medicine, Nashville, 1900, member and past vice president of the Tennessee State Medical Association, past president of the Madison County Medical Society on the staff of the Memorial Hospital, aged 66, died, August 19, of coronary thrombosis

Wilbert Evans Fordyce, Sunnyside, Wash., Keokuk Medical College, College of Physicians and Surgeons, 1900, member of the Washington State Medical Association, served during the World War aged 61, died, August 12, in the Veterans Administration Facility, Portland, of carcinoma of the prostate and bladder

Robert Pattison Miller, Hopewell N. J. Hahnemann Medical College and Hospital of Philadelphia, 1906, member of the staff of McKinley Hospital Trenton and member of the board of managers of the New Jersey State Village for Epileptics at Skillman, aged 53, died, August 3, of coronary occlusion

John W. Scott, Gordonsville, Va., College of Physicians and Surgeons, Baltimore, 1878, member of the Medical Society of Virginia formerly health officer of Gordonsville for many years president of the town council aged 81, died August 23, in a hospital at Richmond of cardiorenal disease

William Thomas Henderson, Mobile, Ala., Detroit College of Medicine, 1896, fellow of the American College of Surgeons surgeon to the Providence Hospital and consulting surgeon to the City Hospital, aged 67 died, August 18, of arteriosclerosis and paralysis agitans

D. Edmund Cone, Coshocton Ohio College of Physicians and Surgeons of Chicago School of Medicine of the University

of Illinois, 1904, member of the Ohio State Medical Association on the staff of the Coshocton City Hospital, aged 67, died, August 28, of angina pectoris

Boyce Richardson Bolton ♂ Washington, D C, George Washington University School of Medicine, Washington, 1917 assistant professor of otorhinolaryngology at his alma mater served during the World War, aged 44, died, August 16, of carcinoma of the pancreas

Charles Wesley Rexroad, Harrisville, W Va, Starling Medical College, Columbus, 1886, member of the West Virginia State Medical Association, past president and secretary of the Ritchie County Medical Society, aged 78, died, August 4, of carcinoma of the bladder

Robert Joseph Boyle, Bristol Conn, Yale University School of Medicine, New Haven, 1908 member of the Connecticut State Medical Society, on the staff of the Bristol Hospital aged 50, died, August 6, in St Francis Hospital, Hartford, of pneumonia

John Earl Pulver, Chicago, John A Creighton Medical College, Omaha 1908, member of the Illinois State Medical Society, chief surgeon for the Chicago and North Western Railroad, aged 52, died, August 28, in Omaha, of arteriosclerotic heart disease.

Edward McGrath ♂ Baraboo, Wis, Rush Medical College, Chicago, 1909 past president of the Sauk County Medical Society, aged 62, on the staff of St Mary's Ringling Hospital, where he died, August 13, as a result of injuries resulting from an automobile accident.

Joseph T Graham, Booneville Tenn, Vanderbilt University School of Medicine, Nashville, 1883 member of the Tennessee State Medical Association, aged 82, died, August 27 of pneumonia which followed injuries received when he fell from his horse.

David A Morton, Boaz, Ala, Medical Department of Grant University, Chattanooga, Tenn., 1896, member of the Medical Association of the State of Alabama, formerly mayor of Boaz, aged 75, died, August 12, in Forrest General Hospital, Gadsden

Ranson S Gage, Dover, Ohio, College of Physicians and Surgeons, Keokuk, Iowa, 1890, member of the Ohio State Medical Association formerly on the staff of the Union Hospital aged 73, died, August 8, at the home of his son in Stockport.

John Wesley Chisholm, Natchez, Miss Memphis (Tenn) Hospital Medical College, 1907, member of the Mississippi State Medical Association, on the staff of the Natchez Hospital aged 63, died, August 15, of coronary thrombosis and arteriosclerosis

Warren Tecumseh Peters ♂ Burt, Iowa Rush Medical College, Chicago, 1894, past president of the Kossuth County Medical Society, bank president, and for many years president of the board of education, aged 66, died, August 3, of cardiac disease.

Edward Clarence Rumer, Flint, Mich, Detroit College of Medicine, 1902, member of the Michigan State Medical Society veteran of the Spanish American and World wars, aged 60, died August 10, in Pleasant Lake, of a self-inflicted bullet wound

Duncan Alex Cameron, Alpena, Mich McGill University Faculty of Medicine, Montreal Que., Canada, 1885 member of the Michigan State Medical Society, formerly member of the state legislature, aged 73, died, August 3 of angina pectoris

Thomas D Cantrell, Bloomington, Ill Rush Medical College, Chicago, 1888, member of the Illinois State Medical Society served during the World War, aged 72, died August 18, of arteriosclerosis and cerebral hemorrhage

Benjamin W Bayless ♂ Shelbyville, Ky, University of Virginia Department of Medicine, Charlottesville, 1902 aged 55 formerly on the staff of the King's Daughters Hospital where he died, August 4 of heart disease.

John R. Cason Jr, Delray Beach Fla University of Arkansas School of Medicine, Little Rock 1905, member of the Florida Medical Association aged 55 died, August 29 of nephritis and arterial hypertension

Amos Cornelius, Owensboro Ky Louisville National Medical College, Medical Department State University 1907 aged 55 died, August 29, in the Cook County Hospital Chicago of hypertensive heart disease.

Abraham William Chernoff, Cleveland, Tufts College Medical School Boston 1932 aged 26 on the staff of the City Hospital where he died, August 18 of a skull fracture received in an automobile accident

William C Dugan, Clark Ky University of Louisville (Ky) Medical Department, 1881, professor emeritus of surgery and clinical surgery at his alma mater, aged 77, died, August 1, of cerebral hemorrhage

Benjamin O. McCleary ♂ Baltimore, College of Physicians and Surgeons, Baltimore, 1910, for many years a member of the city health department, aged 54, died, August 23, at his summer home at Round Bay Md

Douglas Laten Potter, Chicago, Rush Medical College, Chicago, 1935, aged 27 on the staff of the U S Marine Hospital, where he died, August 25, of intestinal obstruction due to adhesions and acute peritonitis

Charles Frederick Lutz ♂ New York, Cornell University Medical College, New York, 1910, also a graduate in pharmacy, aged 48 died, August 20, at his home in Poundridge, of a self-inflicted bullet wound.

Jairus E Hileman, San Diego Calif, College of Physicians and Surgeons of Chicago 1886, member of the California Medical Association, aged 76, died August 4, of arteriosclerosis and heart disease.

George Henry Kuper ♂ St Louis, St Louis College of Physicians and Surgeons, 1896, Barnes Medical College, St Louis, 1911, aged 61, died, August 26, in the De Paul Hospital, of diabetes mellitus

Floyd Harold House ♂ Westville Ind, Baylor University College of Medicine Dallas, Texas, 1921 past president of the La Porte County Medical Society, aged 48, died, August 3, of coronary occlusion

Alfred Nelson Gordon, Fosterville, Tenn, University of Nashville Medical Department, 1905, member of the Tennessee State Medical Association, aged 56 died, August 2, of coronary thrombosis

Leander W Cape, Maplewood, Mo, St Louis Medical College, 1887, member of the Missouri State Medical Association, aged 76, died, August 28, of arteriosclerosis and hypertension

Virgil L Casto, Ripley, W Va University of Louisville (Ky) Medical Department, 1888 formerly member of the state legislature, aged 71, died August 6, of carcinoma of the esophagus

Robert Delroy Carl, Shenandoah, Pa., Jefferson Medical College, Philadelphia, 1930 aged 32, died, August 29, in a hospital at Ashland, as the result of an injury received in a fall

William E Driscoll, Craig, Colo, Medical College of Ohio, Cincinnati, 1886, aged 77, died, August 28, in the Ball Memorial Hospital, Muncie, Ind, of carcinoma of the pancreas

Joel C Chandler ♂ Columbiana, Ala, University of the South Medical Department, Sewanee, Tenn, 1908, aged 54 died August 9, in the Baptist Hospital, Birmingham of uremia

Palmer John Kress ♂ Allentown, Pa, Jefferson Medical College of Philadelphia, 1895, aged 64, died, August 3, in the Jefferson Hospital, Philadelphia, of aplastic anemia

Robert E Lyall, Los Angeles Willamette University Medical Department, Salem, Ore., 1882, aged 80 died, August 4 of ruptured aneurysm of the abdominal aorta

James T Ozanne, Oshkosh Wis, Hahnemann Medical College and Hospital, Chicago 1880, aged 83, died, August 13, in the Mercy Hospital, of a heart block.

Omer C Clark, Worthington, Pa, Western Pennsylvania Medical College, Pittsburgh, 1896, aged 67, died August 26, of chronic nephritis and myocarditis

Arthur L Churchill, Saratoga Springs N Y, Eclectic Medical College of the City of New York, 1880, aged 78, died, August 24, of cerebral hemorrhage

Alexander Craig, Toccoa, Ga., Jefferson Medical College of Philadelphia 1912 aged 53 died, August 12, from the effects of poison taken accidentally

William Edgar Cornett, Rush Hill Mo, St Louis College of Physicians and Surgeons 1890, aged 68, died suddenly, in August, of heart disease.

Richard Travis Edwards, Oklahoma City, Jefferson Medical College of Philadelphia 1889, aged 67, died, August 6 of coronary thrombosis

Herbert D Hill, Westfield Wis Rush Medical College, Chicago, 1880 aged 80, died, August 24, of cardiorenal disease

Edward Homer Griffis, Detroit Michigan College of Medicine and Surgery, Detroit, 1906, aged 58, died, August 29

Anna B Page, Louisville Ky Louisville National Medical College, 1902 aged 72 died July 15

Bureau of Investigation

VAPOR-GAS

"A New and Marvelous Discovery" for Piles Essentially a Mixture of Commercial Sodium Hydroxide and Commercial Gelatin

Inquiries coming to the Bureau of Investigation concerning "Vapor-Gas for Piles" an alleged "scientific remedy" put out by the Vapor-Gas Company of Vining, Minn., stimulate this report

According to a leaflet for Vapor-Gas Co., the product "was first put on the market in February 1935 and has been sold continually since in many states. It has never come in contact with a case it did not subdue with immediate relief the first treatment." The same leaflet claims that "These vapors and gasses penetrate every pore of the rectum. It also disinfects every exposed part and removes your troubles immediately. It's not a salve nor a pill—just gas." With the latter statement there can be no controversy.

One package of Vapor-Gas, purchased direct from the Vapor-Gas Company, Vining, Minn., was submitted by the Bureau of Investigation to the A M A Chemical Laboratory for analysis. The package contained a composition capped jar, the label of which is here reproduced in part.

VAPOR-GAS

FOR PILES

This jar contains 3 treatments
Immediate relief the first treatment
Seldom more than one treatment
necessary

THE VAPOR-GAS COMPANY
VINING, MINNESOTA

Pat. Appl. d For

The report of the A M A Chemical Laboratory follows

LABORATORY REPORT

"The Vapor-Gas jar contained three cork-stoppered vials of about 10 cc. capacity and directions as follows:

'Put about five inches of boiling water into Toilet Jar or tall bucket. Use Jar or Bucket tall enough so that body will be at least eight inches from water. Use towel on rim of jar or bucket so that vapor and gasses don't escape.


"Remove garments and sit down on jar or bucket then take one vial remove cork, and drop vial with contents into water. Remain seated ten minutes. If more treatments are necessary use them about three days apart. In the evening before retiring is the best time to take treatments. When you have been using salves and ointments the first treatments may not penetrate as effectively.

"Do not permit chemicals to come in contact with any part of your body. Keep jar away from children. Keep this jar tightly capped in dry cool place and remaining treatments will keep indefinitely.

"The antidotes listed are those used for alkalis.

VAPOR-GAS

FOR PILES



The latest and most successful remedy for itching bleeding and protruding Piles. It's not a salve nor a pill - Just GAS

The package does not give the common name of the caustic ingredient as directed by the Federal Caustic Poison Act, Sec. 2. Each vial contained approximately 205 Gm of material which consisted of a coarse mixture of crystals varying in size from powder to one centimeter in length and yellowish translucent plates varying greatly in size. One of the vials con-

tained no plate-like material. The crystals were odorless with a bitter taste and basic reaction to litmus. The plate-like material had an odor indicative of protein material and when boiled with water gave a gel.

"Qualitative tests indicated the presence of sodium, potassium, chlorides, gelatin, and traces of sulfate and phosphate. Bromides, iodides, heavy metals, nitrates, formaldehyde and agar were not found.

"Quantitative determinations yielded the following results:

Loss of weight (120 C)	3.33 per cent
Ash	99.81 "
Sulfated ash	174.97 "
Titrateable alkalinity (calculated as OH ⁻)	39.96 "
Titrateable carbonates (calculated as CO ₃ ²⁻)	3.51 "
Sodium	54.59 "
Potassium	1.15 "
Gelatin	approximately 1.25 "

"From the foregoing, it is calculated that the product contains essentially 90.32 per cent sodium hydroxide, 6.27 per cent sodium carbonate, 1.65 per cent potassium hydroxide, and 1.2 per cent gelatin. Commercial sodium hydroxide generally contains impurities (approximately 8 per cent sodium carbonate and 2 per cent potassium hydroxide). Therefore it is concluded that the product consists essentially of a coarse mixture of commercial sodium hydroxide (98.5 per cent) and commercial gelatin (approximately 1.2 per cent)."

Thus a mixture consisting essentially of caustic soda and gelatin is hailed as a "new and marvelous discovery" and the "vapors" from such a combination are said to constitute a "scientific" treatment for hemorrhoids. The Food and Drugs Act of 1906 has never been adequate to meet this kind of exploitation.

Correspondence

A CRITICISM OF STYLE IN MEDICAL WRITING

To the Editor —As I peruse the periodicals of the day, I am struck by the fact that there is style in writing, and that, like all other styles, it is subject to change.

Certain words, new or old are brought before the public eye in some exceptionally good story and then begin to appear in 90 per cent of all stories that are published in the next twelve months. For instance, 99 per cent of all the heroes of today's short stories are 6 feet 2, have red curly hair and "gangling" legs, while some other member of the party is "meticulous" about this or that. Both of these words have been on the market more than a year and are quite shopworn, but no up-to-date story is complete without one or both.

Medical literature is probably the worst offender, it took twenty years to educate the physician to the fact that "phenol" meant carbolic acid, and the two little latin quips "per se" and "sine qua non" were bound to appear in the first column.

A more recent word that has broken all records is "evaluate", it certainly has filled a long felt want.

The Council on Pharmacy and Chemistry set the style years ago in renaming some old remedies by mentioning some of their more important ingredients. Immediately the chemist and the pharmaceutical houses went them one better and mentioned all (and sometimes more) of the ingredients that went into the formation of their new remedies. No longer is it proper to say Dr. Costa's Heart Stimulant or Kenyon's Hepatic. That puts them in the same category as Lydia Pinkham or Dr. Pierce's Favorite Prescription. Now we have backed out of the field and left the spoils to the victor. On reading our medical journals we find the name of some new headache remedy to contain thirty, forty or more letters. I sincerely hope this fad will stop right where it is.

A good old fashioned biscuit will become flouro sodio-lardo, while a pie should or would become a crisco-flouro-sugaro-apple—in oven at 350 for thirty minutes.

On that same basis mere man would become a musculo-torso mustachio basso profundo biped sans tailo while his fair

running mate could be described as faceo-smearo pigmento-voico soprano-exquisito, magno busto cum minimo hippo, cherrio, deario, sweetheart

If this little criticism strikes a responsive chord in your anatomy it is a sure sign that you are over 45 years of age. If so you will probably agree with me that no medical or medicolaboratory man should burst into print until after he had been graduated ten years

FAYETTE E. READ, M.D., Akron Ohio

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST

CONTAMINATION OF FOOTBALL PADS AND HARNESSSES

To the Editor—I have noticed that the skin of football men is often irritated and infected by contact with their shoulder harnesses. Is there any way in which the harness (pad) may be cleaned and disinfected to lessen this trouble? Any advice will be appreciated. Please omit name.

M.D. Wisconsin

ANSWER.—Most of the shoulder apparatus worn by football players on the large Eastern universities is made of a combination of leather and felt. The methods of sterilizing these pieces of apparatus are by dry heat, as for example baking them in some sort of oven. If this is done with care not to cause any burning, the effect on the leather and the felt is negligible. No method of sterilization has been found when rubber is incorporated in the material. The rubber used today in these appliances contains a certain amount of gas, and heat sterilization will cause shrinking of the rubber and it will become hard and useless. Of course, chemical sterilization of the sponge rubber also is impossible without changes occurring in the rubber itself. It is a common practice therefore, to remove the rubber and sterilize the remainder of the apparatus by dry heat, as in an oven, and then replace or renew the rubber. It might be added that dry cleaning by the usual method or zoric has proved unsatisfactory if not destructive to this apparatus

TOXICITY OF CYANIDE CHLORIDE

To the Editor—I would appreciate receiving information relative to cyanide-chloride 75 per cent which is a product in powder form sold for the purpose of hardening steel. A blacksmith has used this product for the past few years spreading it on hot steel which causes the powder to become liquid and then vaporize. No protection is taken from inhaling the fumes that arise. The steel covered with this product is then submerged in water. This whole process causes the fumes. The patient has experienced for the past two years a neuritis of the right leg and various indefinite gastric upsets unrelated to any other cause. Muriatic acid is handled in much the same manner. I would appreciate receiving any information regarding harmful effects

JOHN P. GALLAGHER, M.D. Oelwein Iowa

ANSWER.—Cyanide chloride is to be distinguished from cyanogen chloride (CNCI). The former is a mixture of about 75 per cent sodium cyanide (NaCN) with 25 per cent sodium chloride. This mixture is in wide use in the heat treatment of metal. One of the apparent anomalies of industrial toxicology is that in heat treating departments making use of cyanides no large numbers of poisonings take place even when the cyanide materials are handled with recklessness. Explanation appears to be found in the fact that cyanides at high temperatures such as prevail in heat treatment of metals are quickly changed over into carbonates. Thus sodium cyanide in contact with highly heated metal would be changed over into sodium carbonate and some free nitrogen would be produced. However, when temperatures are fairly low, decomposition of cyanides liberates hydrocyanic acid gas with its deadly properties. Because of the chemical changes mentioned, the occurrence of dangerous vapors or gases in case hardening by a blacksmith is minimized. The advent of a neuritis is suggestive of cyanide action. Collins and Martland have been able to produce a peripheral neuritis in animals by cyanides. This neuritis

was accompanied by degenerative changes of the spinal cord. Any chronic involvement from cyanides as the cause is open to some question. Sponsors of the belief that chronic poisoning may take place point out the following manifestations as characteristic

"In chronic cases muscular weakness, lassitude, pulmonary congestion, irritation of the skin, huskiness, conjunctivitis, edema of the eyelids, irregularity of the pulse varying with the extent of the exposure to the poison, diminution of the appetite with abrupt crises of abnormal and unnatural hunger, loss of weight."

BONE PAINS IN AGRANULOCYTOSIS

To the Editor—A woman aged 51 suffered from an attack of agranulocytosis two years ago. At that time she was desperately ill with a white count of 250. She became moribund but was given pentnucleotide and a series of transfusions. Although recovery was despaired of she recovered. She did however retain the effects of sloughing of her soft and hard palates with speech impairment. Her past history is negative except for typhoid at 15 years of age. About two months ago she began to complain of pains in her bones particularly in her arms and about her neck. These pains have gradually spread until she has become bedridden. While she says the pain is like a crushing process inside the bones I am not convinced that a great deal of it exists in the muscles. The pains are constant day and night and are aggravated by any movement. Examination reveals nothing significant. The long bones are tender to touch however. The temperature does not range above normal but tends to be subnormal. X-ray studies of the long and flat bones are negative. The basal metabolism is minus 11. Blood studies reveal no anemia. The white blood count has ranged around 7,000 with 75 per cent polymorphonuclears. The blood sugar is 95 mg. fasting nonprotein nitrogen 52. Wassermann reaction negative. The urine shows a trace of albumin no sugar one plus fine granular casts and one plus pus cells. The phenolsulfonphthalein test was poor with only 30 per cent regained in two hours. I should like to ask whether you think her present condition bears any relationship to the previous attack of agranulocytosis and what form of treatment you would suggest. So far she has had various sedatives but little opiates. Sulfur intravenously liver extract intramuscularly and a high vitamin high protein diet. Please do not publish name.

M.D. Georgia

ANSWER.—There is no evidence in recorded cases to indicate that bone pains are a part of the picture of a present attack or past attack of agranulocytosis. In many cases of leukemia however, including the aleukemic types, bone pains are a part of the clinical picture. Agranulocytosis and aleukemic leukemia are often difficult to differentiate. It appears unlikely that this patient has aleukemic leukemia, because the duration of the disease since the acute attack and the present blood picture does not indicate it. For that matter, the present blood picture does not indicate the presence of any blood dyscrasia.

Treatment would be purely empirical because of a lack of diagnosis. There would seem to be no reason for employing liver extract or sulfur when the blood appears normal. The use of aminopyrine drugs should be avoided in view of a past attack of agranulocytosis. In view of negative X-ray studies, the probability of these pains arising in muscles would have to be strongly considered. Blood calcium studies may be of value. In view of kidney damage, an obscure infectious process may be likely. Perhaps the Wassermann test should be repeated, in view of the bone pains and past sloughing of the hard palate

FATE OF ASEPTIC SPONGE LEFT IN ABDOMINAL CAVITY

To the Editor—Assuming that an aseptic sponge should be left in the abdomen after a laparotomy what would happen to the sponge? How long would it take for the gauze to deteriorate? What would be its condition say after a period of five years? What effect would it have on the patient? I would appreciate having data bearing on these questions

ARCHIE A. SKENE, M.D. LaCrosse Wis

ANSWER.—The fate of an aseptic sponge left in the abdominal cavity after laparotomy varies with the size and location of the sponge. A sponge of normal size or smaller may become adherent by connective tissue to a viscus usually a loop of intestine or the peritoneal wall, and undergo encapsulation. The omentum is helpful in the walling-off process. Partial or complete absorption of the sponge is uncommon. Abscess formation may be provoked. More usually the sponge is retained more or less intact for perhaps many years. R. D. Forbes reported the removal of a whole sponge after eighteen years (*S. Clin. North America* 13:1353 [Dec.] 1933). A not uncommon result is ulceration from without of the intestine, vagina or urinary bladder into the lumen or cavity of which the sponge may emerge but expulsion through any of these routes is seldom complete, and obstructive and other symptoms will demand surgical intervention. Symptoms may develop

early, be delayed for years, or be absent entirely—After a few days or weeks severe pain may arise in the abdomen followed by signs and symptoms of ileus, bladder disturbances or rectal tenesmus. According to J. P. Greenhill (*Am J Obst & Gynec* 25:231 [Feb.] 1933) the death rate of patients operated on for removal of a foreign body in the abdominal cavity is 17.6 per cent.

CONTROL OF PHLEBITIS

To the Editor—An unmarried girl aged 26 a bank clerk suffered from phlebitis of the left femoral vein and its tributaries two years ago following a simple appendectomy. The left hip had been painful many times previous to the operation and would snap partially out of joint at times. She attributes this to a fall on the hip during childhood. The left thigh measures $1\frac{1}{4}$ inches larger in circumference than the right hip. The left thigh and leg remain swollen continuously. There is slight tenderness over the left femoral vein below the inguinal ligament and over the left popliteal space. Is it probable that the chronic hip ailment caused or aggravated the phlebitis? What is the best treatment for the late effects of the phlebitis? Would an operation in an attempt to remove the venous obstruction be advisable? What is the prognosis if left untreated? Please omit name.

M D Kansas

ANSWER—It is highly improbable that the chronic hip ailment had anything to do with the development of the phlebitis or with the secondary consequences of the phlebitis, provided, of course, it is not a lesion that produces obstruction of the iliac or femoral vein. There is no logic to resection of a vein to overcome venous obstruction and this procedure is not recommended. The results of thrombophlebitis depend on the extensiveness of the thrombosis. They vary from simple edema to varicose veins, stasis dermatitis and varicose ulcers. In order to prevent these complications it is extremely important to treat the condition adequately. The patient should go to bed and have the affected limb elevated until there is no further reduction in the swelling, this usually requires about three days. Then adequate support should be applied to the limb to prevent swelling when the patient again becomes active. Ordinarily a cloth elastic bandage is not adequate. In some cases a well fitted heavy elastic stocking prevents edema. However, in many instances a pure rubber bandage is required. These bandages come in different weights and are 3 inches wide and 15 feet long. The bandage is applied like a puttee over a lisle stocking after preliminary figure-of-eight turns around the foot and ankle and should extend to just below the knee. A support is adequate when it prevents edema when the patient is active and should be worn only during this period. In most instances swelling of the thigh will disappear if swelling below the knee is satisfactorily controlled. In other instances it is necessary to apply an elastoplast or trichoplast type of bandage, since cloth or rubber bandages do not stay in place well. The patient should be instructed to try one day about every month without the bandages or stockings. If edema recurs the support should be worn for an additional month. It can be dispensed with only when there is no further edema when the patient is active. This period varies greatly from a few months to many years. If edema of the limb is prevented by adequate support varicose veins, ulcers and dermatitis will not occur.

TREATMENT OF SYPHILIS

To the Editor—A white woman aged 33 has 3 plus Wassermann and Kahn tests. She states that there never was a primary lesion or a secondary eruption and she presents no evidences of a congenital or a cerebral syphilis. On physical examination she has an enlarged liver and spleen each having a smooth edge and projecting about three finger breadths below the costal margin. Recently she was hospitalized for a period of three weeks and because of failure (through blood urine and roentgenologic studies) to attribute the hepatomegaly and splenomegaly to any other disease entity but syphilis she was referred to me for anti-syphilitic treatment. Would the arsenphenamines be contraindicated in treatment of this case in view of the hepatomegaly? If so will you kindly outline an antisyphilitic course for treatments? May arsenphenamine be used in antisyphilitic treatment if there is liver enlargement due to cirrhosis chronic passive congestion or chronic alcoholism? Please omit name.

M D New Jersey

ANSWER—Apparently this patient has a symptomless type of syphilitic infection. It would probably be well to do lumbar puncture for sometimes there may be an involvement and yet nothing will show on physical examination. Naturally if she is married the husband and children should also be checked up.

In a case of this type it is correct to surmise that the arsenicals for the present at least should not be employed. It would be preferable to put the patient on potassium iodide internally and give a course of twelve intramuscular injections of bismuth salicylate giving the injections once a week, and of course watching the patient for any manifestations of

toxic phenomena. Following this therapy a course of from fifty to sixty applications of mercurial ointment may be given, the patient rubbing the ointment in for thirty minutes by the clock. Following this course of treatment, if the patient has responded well and there have been no unusual disturbance and no toxic manifestations, and if the liver volume has decreased in size without the production of too much scar formation, neoarsphenamine may be tried cautiously, starting with an injection of 0.2 Gm and gradually working it up to a maximum of 0.3 Gm, the injections being given one week apart for a series of twelve treatments. If there is no disturbance from this treatment, there would then be no objection to alternating courses of neoarsphenamine and of bismuth salicylate until the patient has received at least thirty or forty injections of the bismuth and possibly from twenty to thirty of the neoarsphenamine.

Naturally, it is difficult to outline a complete course of treatment for a patient of this sort complications may arise. It would be well to follow the patient's icteric index in connection with the treatment, especially the arsenical therapy.

Naturally, a Wassermann test should be made at the end of each course of treatment, and if there is involvement of the central nervous system this would likewise require further changes in therapy.

In cirrhosis of the liver the arsenicals should be used with great care, and in chronic passive congestion with liver enlargement much would depend on the causation. It probably would be preferable to get along with other therapy.

Chronic alcoholism of itself is no contraindication to therapy if the alcohol is stopped after the treatment is instituted.

TREATMENT OF OBESITY

To the Editor—I have under my observation a man aged 32 height 5 feet 11 inches (180 cm) who is gaining weight constantly in spite of rigid dietary restrictions. His present weight is 307 pounds (139 Kg). About a year ago he was treated with alpha-dinitrophenol sodium of which he took approximately 8 to 10 grains (from 0.5 to 0.65 Gm) daily for ten weeks. There was a reduction in weight to about 275 pounds (125 Kg). He was greatly pleased with the results but following the numerous reported cases of undesirable effects of dinitrophenol I discouraged the further use of the drug. There is a family tendency toward obesity although not as marked as in this case. The basal metabolic rate was taken on several occasions the results being plus 13 and minus 8. He has a persistent tachycardia and is quite dyspneic on exertion. The pulse rate is usually between 96 and 104. The blood pressure is 160 systolic, 110 diastolic. In other respects his health seems quite normal. Thyroid therapy when pushed to tolerance only accentuates the tachycardia. Is there any possibility of any pituitary dysfunction? What suggestions can you give me as to handling this case? Kindly omit name and address.

M.D. Ohio

ANSWER—It is impossible, from the description of the case to rule out the possibility of a pituitary dysfunction. Nevertheless to consider such a dysfunction, if present, as the chief etiologic agent in this case of obesity would be incompatible with the increased blood pressure and pulse rate and with the normal basal metabolic rates.

It is apparent that the patient is not exhibiting a subnormal expenditure of energy. The only alternative explanation of the obesity, regardless of endocrine or hereditary factors, is therefore an excessive caloric intake. In other words, he eats too much. If the dietary prescription really represents a "rigid restriction" of calories, the patient is either mistaken or is lying about his adherence to it. A useful procedure in such cases when economically and socially possible, is the administration of the prescribed diet under supervision in a hospital for a week or two.

The resumption of gain in weight after cessation of dinitrophenol illustrates the common fallacy of attempting to treat obesity by temporarily increasing the energy expenditure with drugs. It is obvious that, unless the patient learns to eat less he must regain his excess weight as soon as the artificial stimulus to his metabolic processes is removed. Thus except in a case of frank hypothyroidism it is not logical to use such drugs, since they cannot be justifiably continued for an indefinite period.

The use of either dinitrophenol or thyroid extract in this case is also inadvisable from another standpoint. Aside from the many toxic effects of the former, both these substances increase the work of the cardiovascular system. Since this is the system which seems to be showing the most deleterious results of the obesity it is hardly reasonable to burden it still further by the method of treatment that has been given.

It is suggested that every effort be made to see that the patient really follows a proper dietary regimen.

IMPOTENCE IN DIABETES

To the Editor—About a month ago a white man aged 36 came to me complaining of impotence. The libido was present but he could not get an erection. I elicited a history of diabetes in the family with a history that caused me to suspect it in the patient. The impotence had been present for three weeks. An examination revealed that he was obese with the pituitary distribution of fat. He weighed 182 pounds (83 Kg) and was 5 feet 5½ inches (165 cm) in his shoes in height. The penis was small, the testicles were small and hard. A prostatic examination revealed uncountable white blood cells in the secretion. A urinalysis was positive for sugar, the remainder of the analysis being negative. A fasting blood sugar showed 222 mg per hundred cubic centimeters of blood. The patient was placed on a diabetic diet and his blood sugar tested at intervals. He has dropped to 164½ pounds (75 Kg) after about two months of dieting and the sugar dropped to 124 mg per hundred cubic centimeters after six weeks of dieting. However he was not experiencing any return of potency and his anxiety induced me to put him on endocrine (Phenglandular tablets Anglo-French) medication but I was shocked to find that the blood sugar had increased markedly after about three weeks. I would appreciate advice as to further treatment. Would antutrin S increase the blood sugar? If not how would you administer it? I hope you can give me an early answer as I am in a quandary. Please omit name.

MD Pennsylvania

ANSWER—It is not unusual that patients with diabetes have impotence. It seems extremely important that the diabetes should be adequately controlled. To this end the patient should be taught how to test his urine for sugar and a program of treatment should be outlined which keeps the urine free from significant amounts of sugar all the time. Insulin should be used if the diabetes cannot be adequately controlled without it. It is generally agreed by most students of diabetes that it is adequately controlled when significant amounts of sugar are not found in the urine, regardless of the amount of sugar in the blood. It is almost certain that the tablets which the correspondent has prescribed for the patient are without medicinal value. Antutrin S would not increase the blood sugar and it does not seem indicated for this particular patient. It is quite probable that the impotence will disappear gradually after the diabetes has been adequately controlled for a time. It is advisable to treat the chronic prostatitis, and a good deal of encouragement will probably be needed from time to time to overcome the psychic factor, which constitutes part of the cause for the impotence.

BENEDICT TEST FOR SUGAR

To the Editor—In response to a query concerning the use of Benedict's solution for the determination of sugar in urine (THE JOURNAL March 14) you advise the use of 5 drops of urine. Why do you advocate only 5 drops of urine? Benedict's original article you know specifies 8 drops of urine. Students are instructed to follow an 8 x 22 procedure (Wylie, H B Laboratory Manual of Biochemistry University of Maryland School of Medicine ed 9 1935) wherein 8 drops of urine is added to 5 cc. of Benedict's solution and shaken. The mixture is boiled for two minutes and then set aside to cool for two minutes. Any deviation from this procedure is supposed to yield misleading results. Please omit name.

MS Maryland

ANSWER—As drops vary in size with the kind of dropper used it would be better to specify the amount of urine to be used for a qualitative test for sugar in terms of cubic centimeters. Five drops (0.25 cc) was recommended to avoid errors due to turbidity caused by urates and phosphates. Nicholson's Laboratory Medicine advises the use of 0.25 cc, Osgood and Haskins advises 0.3 cc. or about 6 drops, Kolmer and Boerner use 0.5 cc, Gradwohl's new book recommends from 8 to 10 drops, and Gershenfeld advises 8 drops. The important conclusion to be drawn is that an excess of urine should be avoided. The amount added to 5 cc. of Benedict's solution should not exceed 0.5 cc. of urine.

SERUM TREATMENT OF POLIOMYELITIS

To the Editor—In reference to the editorial on the serum treatment of acute poliomyelitis it is not quite clear to me whether or not normal adult serum is of equal value to convalescent serum. Would it be necessary to cross agglutinate convalescent or normal adult serum before it is given intravenously?

L CHARLES ROSENBERG MD Newark N J

ANSWER—All the studies that have been made so far indicate that pooled normal human serum contains as great a quantity of neutralizing substances as does convalescent serum or greater. Therefore it would be anticipated that pooled normal adult serum would be effective in treatment. Such a hypothesis is borne out by the few reports already published (Zingher in 1916, Levinson, McDougall and Thalheimer in 1931 and Brodie in 1932). It is not necessary to cross agglutinate either convalescent or pooled adult human serum before using

either intravenously. This and other questions in regard to poliomyelitis serum are reviewed thoroughly in an article by Paul H Harmon (Poliomyelitis. I Experimental and Theoretical Basis for Serum Therapy, II Results of Treatment in the Acute Disease, Analysis of Reports of 4,400 Patients Treated with Serum, Observations on 2,660 Untreated Patients, *Am J Dis Child* 47 1179, 1216 [June] 1934).

PLASTIC SURGERY FOR COLLAPSING ALAE NASI

To the Editor—Please let me know if plastic surgeons can correct collapsing alae nasi and how they do it. The inside of the nose is sufficiently open and there is no nasal obstruction.

JACOB SEIBERTH MD, Pixley Calif

ANSWER—Since, depending on its location, collapse of the ala is to be attributed to failure of the upper or the lower lateral cartilage to maintain the natural external convexity, and since that failure is due to attenuation of the cartilage, attention should first be directed to locating and determining the degree of this attenuation. This done, the choice is between alternative methods. In the case mentioned, the passage being "sufficiently open," the external concavity might be corrected by means of wedge shaped excisions within the nose, parallel to the nostril rim, with the apex in the direction of the external surface. When the edges are approximated, within, the inner surface being thus reduced, the effect is toward producing concavity within and consequently convexity on the outside.

The other recourse, based on inadequate support by the cartilage, is to excise a rhomboid of the cartilage, with the long diagonal in the vertical direction, and transfer it with the long diagonal horizontal. This tends to establish exterior convexity. It involves lifting the alar eminences, for freedom of access and when these are returned they can be shifted a little inward on the nose floor, thus still further establishing the convex line. Slight advancement of the skin will cover the small surface defect.

USE OF TETANUS ANTITOXIN

To the Editor—Nov 23, 1934 I wrote you regarding tetanus antitoxin. My letter and answer appeared in THE JOURNAL Aug 22 1936. I should like to have you consider in relation to the answer to my query the point of view expressed in a recent issue of THE JOURNAL replying to a question on the use of tetanus antitoxin (puncture wounds received from needles while sewing mattresses). The answer states that unless tetanus is present in the community or unless cases of tetanus have been reported from wounds produced in connection with unprocessed cotton there is no need of giving tetanus antitoxin. I should like to know how one can correlate the two divergent points of view expressed in these two answers. I realize that these answers come from outside sources and that you cannot agree with both of them but I know you will agree that so far as possible consistency should govern the policy that shapes the answers to these letters.

ELMER S BAGNALL, MD Groveland Mass

ANSWER—It is natural that the judgment of physicians will vary with respect to the danger of tetanus from wounds of various kinds. There can be no question, however, about the deadliness of tetanus once established, even if antitoxin is used for curative purposes. Nor is there any question about the value of antitoxin for preventive purposes. Hence it is clear that the general principle governing the use of tetanus antitoxin for the prevention of possible posttraumatic tetanus must be take no chances—safety first.

X-RAY TREATMENT OF ACTINOMYCOSIS

To the Editor—Has the x-ray proved a valuable aid in the treatment of actinomycosis? I have in mind a case of this kind in the scapular region (confined to the subscapular muscle area) with a duration of two months.

ALEXANDER KREMER MD Mercer Wis

ANSWER—The treatment of actinomycosis by large doses of x-rays can be considered the most successful treatment. In contrast to x-ray treatment of every other inflammatory process actinomycosis requires the largest doses that can be applied without damaging the skin. The more localized the actinomycotic foci are and the earlier they are treated the more favorable is the prognosis. Therefore the prognosis of subcutaneous involvement is obviously better than that of abdominal or pulmonary involvement. The radiation should be applied from more than one field. The simple reason for this is that it gives opportunity of repeating the treatment when the first application has not been completely satisfactory. In this particular case in which the subscapular region is involved the irradiation should be attempted from two fields.

The x-ray treatment is usually combined with the administration of potassium iodide in daily doses of from 1 to 2 Gm for one week, followed by a week of rest. The x-rays usually employed are of 180 to 200 kilovolt peak and 5 milliamperes, and are filtered through 0.5 mm of copper and 0.25 mm of aluminum.

After a period of from six to ten weeks the average case of actinomycosis should be cured by this treatment.

GLYCOSURIA IN DIABETES INNOCENS

To the Editor—A man aged 55 in good health has had a mild glycosuria for the past twelve years. The urine which is frequently normal contains from 0.1 to 0.3 per cent of sugar in a twenty-four hour collection. He has absolutely none of the recognized symptoms of diabetes. He is not restricted as to his diet except as to the prohibition of sugar in his tea or coffee. A number of sugar tolerance tests were essentially alike and showed up about as follows. Before breakfast the urine is negative and the blood contains 71 mg per hundred cubic centimeters after ingestion of 100 Gm of dextrose.

Time	Urine	Blood
10 20 a m	0.15%	117
10 50 a m	0.9%	87
11 50 a m	0.3%	80
12 50 p m	0.15%	64

Is this man diabetic? Is he potentially diabetic? In view of the low blood sugar three hours after the ingestion of the dextrose would it be rational to advise the use of some carbohydrate before retiring for the night? Kindly omit name.

M D New York

ANSWER—The description is that of a mild renal glycosuria or diabetes innocens. It is not characteristic of a potential or true diabetes mellitus.

No treatment is necessary or advisable in such cases unless the loss of sugar in the urine is sufficient to cause undernutrition. Under these circumstances the treatment consists in simply adding sufficient carbohydrate to the diet to offset the loss by excretion. It is not necessary to give carbohydrate before retiring at night, unless the low blood sugar at this time is accompanied by symptoms of hypoglycemia.

INFERENCES FROM SUGAR TOLERANCE TEST

To the Editor—A patient had a fasting blood sugar of 160 mg with no urinary sugar. One hour after administration of 100 Gm of dextrose it was 275 mg with 2 plus urinary sugar. Two hours after it was 187 mg with 1 plus urinary sugar. Three hours after it was 110 mg with no urinary sugar. The question is whether this sugar tolerance curve indicates a diabetic state or is more probably an endocrine disturbance or infectious process. Please omit name.

M D Missouri

ANSWER—The dextrose tolerance curve which the correspondent has described is not typical of a diabetic state. In the absence of further information regarding the history and clinical status of this patient it is impossible to arrive at any specific conclusions. However, the curve is suggestive of either a moderate toxic liver damage (Soskin, Samuel, and Mirsky, I A. Influence of Progressive Toxic Liver Damage upon the Dextrose Tolerance Curve, *Am J Physiol* 112: 649 [Aug.] 1935) or a hyperactivity of the anterior pituitary gland (Soskin, Samuel, Mirsky, I A., Zimmerman, L. M., and Heller, R. C. Normal Dextrose Tolerance Curves, in the Absence of Insulin, in Hypophysectomized-Depancreatized Dogs, *Am J Physiol* 114: 648 [Feb.] 1936).

BLOOD TESTS FOR PATERNITY

To the Editor—The question has been raised as to the efficiency of the blood typing method of determining parentage together with the dependability and reliability of this method. Can you tell me the weaknesses of the method and the situations in which it is scientifically dependable and reliable? Please omit name.

M D Pittsburgh

ANSWER—Blood typing can show only that a given man may be the father of a given child or that he could not possibly be its father. It cannot show that a given man is the father of a given child. If the blood of a child contains an agglutininogen that is not present in at least one of its purported parents the child cannot be the offspring of the pair. There is no known test by which it can be determined that the unknown father of a given child belongs to any given race. Racial affiliations cannot be determined by any known blood test. Admissibility of evidence as to blood grouping was ably discussed by the Supreme Court of South Dakota in *State v. Dahm*, 266 N. W. 667, decided April 16, 1936, in which the court held that such evidence had been properly excluded in the case before it, because of the status of the art of blood grouping when the

case came to trial, but indicated, without actually deciding, that when the Supreme Court rendered its decision about four and one-half years after the trial, the state of the art had advanced sufficiently to make it not improper for a trial court to hear such evidence.

ALCOHOL IN DIABETES

To the Editor—May I ask you do you know and is it recorded that diabetes is caused by drinking beer and whisky? Also is it detrimental for a diabetic patient to drink beer or alcohol in moderate amounts? I cannot find recorded in Allen's book regarding alcohol—I have had it inferred—that alcohol may be a benefit.

R B Hopkins M D Milton, Del.

ANSWER—The only way in which it seems reasonable that alcoholic drinks could lead to diabetes would be through the causation of obesity. Few today consider that carbohydrates taken in excess will lead to diabetes, except through obesity in the hereditarily predisposed. Indeed, Himsworth is of the opinion that a high fat and low carbohydrate ration is more common among nations in which the diabetic incidence is high.

It would appear reasonable to conclude that it is as detrimental for a diabetic as for a normal person to drink beer or alcohol in moderate amounts, but with this difference that if a diabetic person taking insulin should have a reaction and the remotest suspicion of an alcoholic breath should be noted he might lose his life. Indeed repeatedly persons with diabetes have been sent to jail for drunkenness when they were simply having an insulin reaction. Furthermore, the diabetic patient is especially susceptible to toxic amblyopia produced by the use of alcohol and tobacco. For practical purposes a diabetic patient would best leave alcohol alone. This opinion is not shared by some physicians, who allow a certain amount of alcohol.

EARLY CLOSURE OF FONTANELS

To the Editor—I have under my care a child aged 3 months whom I examined the first time two weeks ago. I found at that time the fontanels completely closed. The head is slightly flat on top and is 15 3/4 inches in circumference. Aside from the premature closure of the fontanels the child is normal physically and mentally. Is there any possibility as the child grows that this premature closure may interfere with further growth of the head and normal development of the brain? Can anything be done? Please omit name.

M D Illinois

ANSWER—Under normal conditions the posterior fontanel of an infant is usually closed by the end of the second month, and the closure of the anterior fontanel varies between fourteen and twenty-two months. The average circumference of the head for a 3 months old infant varies from 15 1/8 to 15 1/2 inches. The circumference of the head of the infant mentioned in the question is, therefore, within the normal limit.

Ordinarily the occurrence of premature closure of the fontanels indicates a disturbance in the growth of the brain. The common example is microcephaly. It would be interesting to compare the circumference of this infant's head with the chest circumference. Normally at birth the head circumference is greater than the chest circumference and remains so until about the twelfth month, when the circumference of the chest and of the head are about equal. Thereafter the circumference of the chest surpasses that of the head in measurement.

As the question states that the infant is otherwise normal, both physically and mentally, and as the circumference of the head is within normal limits, one would infer that the early closure of the fontanels in this case is simply a normal developmental deviation and not related to any organic defect of the brain.

EFFECTS OF COLD ON ERYTHROCYTES

To the Editor—What effect has been noted on erythrocytes after passing through cold extremities? Please omit name.

M D Minnesota

ANSWER—There is some stasis or slowing of the blood flow in the skin subjected to such a degree of cold that the normal tone of the blood capillaries and the musculature of the arterioles are paralyzed by the local lowering of the temperature. There is also some evidence that in normal animals very prolonged stasis (from thirty minutes to several hours) renders the erythrocytes more susceptible to hemolysis by hypertonic solutions. But this stasis probably exceeds that induced by cooling of the body surface of man except in cases of extreme exposure. In susceptible individuals (paroxysmal hemoglobinuria) intravascular hemolysis occurs in the blood vessels of the skin, even on moderate exposure to cold. This seems to

be due to the presence in the blood plasma of these people of an isohemolysin which becomes absorbed on the cooled corpuscles, and the laking takes place when the blood again approaches the normal body temperature. Ninety per cent of the people showing this reaction to moderate surface cooling have chronic syphilis or show symptoms of Raynaud's disease. The origin and nature of the isohemolysin are not known

USE OF X-RAYS IN ACUTE LEUKOSIS

To the Editor—A white woman aged 53 weighing about 160 pounds (73 Kg) a loss of about 50 pounds (23 Kg) in the last six months has occasional hemorrhagic areas over the body and circumscribed lesions on the tongue. The red cell count is 1 800 000 hemoglobin 40 per cent, total white cell count from 20 000 to 26 000 differential count as reported by a professor of pathology myeloblasts 22 per cent premyelocytes 4 per cent myelocytes 1 per cent juveniles 3 per cent band forms 17 per cent, segmented forms 42 per cent, lymphocytes 10 per cent basophils 1 per cent. There is no splenic enlargement. I am now giving repeated blood transfusions and should like to know whether the use of x-rays is indicated in relatively low leukocyte count and no splenic enlargement. Please omit name

M D Georgia.

ANSWER.—The use of x-rays or radium is ordinarily contraindicated in acute leukosis (lymphadenosis and myelosis) whether it is leukemic or subleukemic. While no form of treatment has any appreciable effect on the course of the disease, repeated blood transfusions have a temporary value since two of the symptoms of acute myelosis are severe anemia and hemorrhage.

LEUKOPENIC INDEX

To the Editor—What is the technic for determining the leukopenic index? Please omit name

Tennessee

ANSWER.—The leukopenic index was described by Vaughan in the *Journal of Allergy* for September and November 1934. According to the test an allergic hypersensitivity to a food exists if ingestion of the food is followed by a fall in the total leukocyte count of more than 1 000. Gay in 1936 also stated that the test was of value in determining the allergic state and the allergen at fault.

The test cannot be accepted as of established value in determining hypersensitivity because the normal fluctuations in the white blood count of normal persons in a fasting state are greater than 1 000. Sabin Simpson and many others have demonstrated fluctuations of several thousand in a few minutes. There is a difference of from 3 000 to 6 000 in the white blood count of many normal persons at different times of the day. An editorial in *THE JOURNAL* June 6 discusses the leukopenic index and gives references to the literature.

ROENTGENOGRAPHY OF THE EYE

To the Editor—Is it safe to take an x-ray picture of the eye when trying to locate some foreign object, that is will the optic nerve be injured by the x-rays? Can you supply references or information on the frequency and severity of eye injuries due to x-ray pictures?

C EDITH KERBY Statistician New York

ANSWER.—It is perfectly safe to make a roentgenogram of the eye and orbit. If a number of roentgenograms are made at the same time, however, there might be danger from excessive total exposure. This depends on the number of exposures made. The optic nerve is one of the least sensitive of the ocular structures. The structures most likely to be affected by excessive exposure are the conjunctiva and the crystalline lens. References on the frequency and severity of eye injuries in relation to roentgenography are not available.

EFFECT ON SPERMATOZOA OF HEAT APPLIED TO SCROTUM

To the Editor—I have read that the health of spermatozoa is conserved by being kept in the refrigerator like scrotum and that on reaching a warm vagina they soon begin to lose their vitality. As a practical proceeding in birth control, what is the effect on spermatozoa of immersing the scrotal sac in hot water for a length of time? Please omit name

M D Minnesota.

ANSWER.—Whereas it is well established that spermatozoa are susceptible to and injured by ordinary body temperatures (extrascrotal temperatures) and that numerous experiments on the application of hot water to the scrotum of the lower mammals causes loss of the sperm producing elements, it is not yet known what degree of hot water applied to the scrotum of man is effective. There is little doubt that the method could be made a practical birth control procedure but the temperature and time of application and the frequency of application to be effective in man have not yet been worked out.

LOCATING BRAIN TUMORS BY OLFACTORY TESTS

To the Editor—I am interested in obtaining information concerning the location and diagnosis of brain tumors by olfactory tests also the method of conducting these tests. I should like reprints of articles or references on this subject. I understand that Dr Charles A. Elsberg of Columbia University is to lecture on this subject at Buffalo University on April 18 and thought it might be possible to obtain a copy of his lecture.

ALFRED C KINGSLEY M D Phoenix, Ariz.

ANSWER.—A series of papers on the new methods for testing the sense of smell were published in the *Bulletin of the Neurological Institute of New York* in 1935 and 1936. A preliminary report on the value of the new tests for the localization of supratentorial tumors of the brain appeared in the December 1935 issue of that journal. A report on the value of the tests for the localization of frontal lobe tumors appeared in the April 1936 issue. The test is based on a new principle and is a simple one. Reprints of the papers can be obtained by addressing the editor of the *Bulletin*, care of the Neurological Institute, Fort Washington Avenue and 168th Street, New York City.

FATAL DOSE OF STRYCHNINE

To the Editor—Is it likely that an adult dose of strychnine sulfate given subcutaneously by a nurse by mistake to a young child would be a fatal dose? Are infants relatively insensitive to strychnine? Please omit name and initials

M D Pennsylvania

ANSWER.—Children are not generally considered more sensitive to strychnine than adults, but there is a fatal case on record (Willführ) after a dose of 4 mg in a 2½ year old girl. As the minimum lethal dose for the adult is generally assumed to be 30 mg this might—considering the probable weights—suggest a relatively greater sensitiveness in the child.

DUSTING POWDER FOR SHOES IN RINGWORM INFECTION

To the Editor—I should like a formula for a dusting powder that would be suitable for use in the shoes of persons who are suffering from ringworm infection of the feet.

R B KROUSE M D Lima Ohio

ANSWER.—A dusting powder suitable for use in the shoes of persons suffering from ringworm of the feet may be compounded as follows

Sodium thiosulfate	6 Gm
Boric acid	to make 30 Gm

From 5 to 10 per cent of sodium or potassium iodide is sometimes added to this formula.

COMPATIBILITY BETWEEN PROCAINE AND ARSENICALS

To the Editor—Will you please inform me as to any possible incompatibility between novocain and arsenicals?

M D Mich

ANSWER.—While procaine (novocain) hydrochloride is compatible with arsenic trioxide or acid solutions of arsenic trioxide it is incompatible with solution of potassium arsenite (Fowler's solution) because of the alkalinity of the latter.

COMPLEMENT FIXATION TEST IN GONORRHEA

To the Editor—In the reply to M D Ohio (*THE JOURNAL* September 26 p 1071) concerning the significance of a strongly positive complement fixation test in gonorrhea it is stated that, since such specific antibodies are found only when gonococci are present in the body and disappear within several weeks after the disappearance of the gonococci a careful search for the residual infection must be made. It is stated in the query that a gonococcus filtrate was injected intradermally. It has been my experience and it is fairly generally accepted in the literature that injection of a gonococcus vaccine or filtrate stimulates the production of complement fixing antibodies. I believe that in the case in question the positive complement fixation test may have been due to the injection of the filtrate and not to the residual infection.

ISRAEL DAVIDSON M D Chicago

ADMINISTRATION OF ANTITOXIN TO SENSITIVE PATIENT

To the Editor—An additional procedure to that mentioned in your reply on the Administration of Antitoxin to Sensitive Patient is advisable (*THE JOURNAL*, October 10 p 1243). It is well to administer epinephrine with the antitoxin but the transient effect of the epinephrine would leave the patient exposed within a few hours to the later serum reactions in the sensitive case. I advise in addition to the epinephrine injection the oral use of ephedrine every four hours for a period of ten days and so obviate or minimize the untoward serum reactions that are not immediate.

DAVID L. ENGELSHER M D New York

Medical Examinations and Licensure

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AMERICAN BOARD OF RADIOLOGY Atlantic City, June 4-6 Sec, Dr Byrl R. Kirklun Mayo Clinic Rochester

AMERICAN BOARD OF UROLOGY Chicago Dec. 4 6 Sec. Dr Gilbert J Thomas 1009 Nicollet Ave. Minneapolis

Nevada August Reciprocity and Endorsement Report

Dr John E Worden, secretary, Nevada State Board of Medical Examiners, reports 4 physicians licensed by reciprocity and 1 physician licensed by endorsement at the meeting held in Carson City, August 3 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Stanford University School of Medicine	(1929)		California
Harvard University Medical School	(1920)		Ohio
University of Michigan Medical School	(1929)		Michigan
University of Pennsylvania School of Medicine	(1934)		Utah

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Harvard University Medical School	(1932)		N B M Ex

Illinois June Examination

Mr Homer J Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, June 23 27, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and sixty-nine candidates were examined, 267 of whom passed and 2 failed. The following schools were represented

School	PASSED	Year Grad	Per Cent
Chicago Medical School (1935)	78 * 82 (1936) 77 79 79 81 81 81 81 81	(1932)	75
	81 82 82 82 82 82 82 83 83 83 83 83 83		
	83 83 83 84, 84, 84, 84 84 84 84 85 * 85 85 85		
	85 85 85 85 85 86 86 86 86 87 87		
Loyola University School of Medicine	(1936)		79
	80 80 81 * 81, 81 82 82 82 82 82 82 83 83 83		
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	85 85 85 85 86 86 86 86 86 86 86 86 86		
Northwestern University Medical School	(1935)		76.
	85 85 86 86 (1936) 80 81 82 * 82 82 82 83 83 83		
	83 83, 83 83 84 * 84 84 84 84 84 84 84 85 * 85 85		
	85 85 85 85 85 85 85 85 85 85 86 * 86 86 86		
	86 86 86 87, 87 88		
Rush Medical College	(1935)		83
	84 86 (1936) 82 82 83 83 83 83 83 83 84 * 84 84		
	84 84 84 84 84 84 84 85 85 86 86 86 87 87		
	88 88 89		
School of Medicine of the Division of the Biological Sciences	(1935) 85 86 (1936)		83 87 * 87
University of Illinois College of Medicine	(1935)		88,
	(1936) 79 80 81 81 81 82 82 82 82 82 82 83 *		
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	86 86 86, 87 87 87 87 87 87, 88 89		
Tulane University of Louisiana School of Medicine	(1935)		83
Johns Hopkins University School of Medicine	(1935)		84
Wayne University College of Medicine	(1936)		85
Washington University School of Medicine	(1935)		84
University of Oklahoma School of Medicine	(1935)		85
Medical College of Virginia	(1933)		84
Marquette University School of Medicine	(1936)		84
University of Wisconsin Medical School	(1935)		82
University of Toronto Faculty of Medicine	(1933)		83
Medizinische Fakultät der Universität Wien	(1932)		78
Hamburgische Universität Medizinische Fakultät	(1930)†		87
Universität Basel Medizinische Fakultät	(1934)†		84

Thirty-seven physicians were successful in the practical examination held in Chicago, June 25, for reciprocity and endorsement applicants. The following schools were represented

School	PASSED	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1928)		Indiana
Northwestern University Medical School	(1933 2)		Utah
Rush Medical College	(1928)		Indiana
Indiana University School of Medicine	(1934)		Indiana
University of Kansas School of Medicine	(1926)		Kan as
Tulane University of Louisiana School of Medicine	(1930)		Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons	(1932)		Maryland
Harvard University Medical School	(1929)		Wisconsin
Detroit College of Medicine and Surgery	(1931)		Michigan
St. Louis University School of Medicine (1924) *	(1934) *		
(1935 4) * (1935 7) Missouri			

Washington University School of Medicine (1920)	(1934) 2)
(1935) Missouri	
University of Nebraska College of Medicine	(1935)* Kansas
University of Oregon Medical School	(1933) Oregon
Marquette University School of Medicine (1926)	(1931) Wisconsin
Univ of Wisconsin Medical School (1932) Wisconsin	(1933) Missouri

School	PASSED	Year Endorsement
Howard University College of Medicine		Grad
University of Louisville School of Medicine		(1934)* N B M Ex
University of Toronto Faculty of Medicine		(1935) N B M Ex
		(1933)* N B M Ex

* License has not been issued

† Verification of graduation in process

Book Notices

Synopsis of Diseases of the Heart and Arteries By George R. Herrmann M.D. Ph.D. Professor of Clinical Medicine University of Texas. Cloth Price \$4 Pp 344 with 91 illustrations St. Louis C. V. Mosby Company 1936

George Herrmann has written a synopsis of diseases of the heart and arteries dedicated to Henry Christian and intended primarily for the plodding student and the assiduous conscientious practitioner. It is well arranged and full of information which should prove to be of great value to the medical student beginning his study of heart disease. Its brevity on certain clinical subjects makes it somewhat less useful for the physician in practice. It is difficult or impossible to construct a small volume that is equally suitable for the beginning medical student and for the more or less experienced practitioner.

The book is replete with wise observations, an example of which is found at the top of page 19. "The early recognition of a heart affection is a great boon for the patient, provided it is made by a wise physician who is not an alarmist and who knows his patient and quietly arranges his life along conservative lines. Every patient must be spared the ravages of worry, for it may cause more distress than the actual heart disease itself." As in any volume of the sort, inaccuracies have crept in, but they are surprisingly few. One of these on page 51 states that "in pneumonia a diagnosis of heart failure should be made only when the venous pressure has been determined and found elevated, regardless of the amount of dyspnea and cyanosis", this statement holds true for failure of the right ventricle but not when the strain and failure are wholly on the left side, when for example the toxic effect and other strain incident to any severe infection may prove too much for a left ventricle already severely damaged or strained by hypertension, coronary thrombosis or aortic valve disease. On page 54 the statement that teleroentgenograms made at a distance of two meters or six or seven feet "can be measured for exact cardiac and aortic transverse diameters" is not strictly true, for even at that distance there is an appreciable magnification obviated only by orthodiagraphy. On page 277 the statement that aortic stenosis is the rarest of (valve) lesions is probably a slip of the pen for later statements belie this and moreover in some parts of the country north of Texas aortic stenosis is fairly common. The chapter on congenital heart lesions is as in the great majority of books on the heart, disappointing. Also little is said of the clinical recognition of dissecting aneurysm of the aorta. These few errors and omissions detract, however, but little from the general excellence of the book.

The volume is well printed and the illustrations are clearly reproduced. It is a pleasure to recommend the book to the student beginning his study of cardiovascular disease and to the physician who wishes to review some of the fundamental facts of the subject.

Die einheimische Sprue und ihre Folgekrankheiten (sekundäre Avitaminosen) Von Professor Dr. K. Hansen und Dr. H. v. Staël von Holstein. Boards Price 1.80 marks. Pp 113 with 45 illustrations Leipzig Georg Thieme 1936

This is primarily a discussion based on five cases of endemic sprue of long duration observed in Germany. Study of the symptomatology led the authors to the conclusion that there are four principal stages of endemic sprue. First is the prodromal stage, which lasts from a few to many years and during which period correct diagnosis is frequently overlooked. It is characterized by either painful or painless disturbances of the gastro-intestinal tract without any definite objective changes. In the second stage objective signs appear most common of

which are aphthous stomatitis, meteorism, often large gray heavily fat containing stools, loss of appetite, pigmentation of the skin, and beginning psychic changes. Anemia of the pernicious type is often present. In the third stage complications frequently appear. The pigmentation, the anemia, the cachexia, copious fat stools and severe psychic changes are the most marked signs during this stage. True tetany and osteoporosis of the skeletal system and the characteristic changes of the skin (mummy skin), the nails and the hair become exaggerated. Finally, the fourth stage leads toward rapid death accompanied by one or all of the following symptoms. The thorax of the patient is pushed together like that of a mummy, the transverse colon, filled with fecal masses, is easily visible through the paper thin skin, and the skin of the extremities is edematous. Decalcification of the bones makes every motion virtually impossible. The most important three theories concerning the etiology are the infection theory, the primary disturbance of internal secretion, and the vitamin deficiency theory. At present it is impossible to determine the primary importance of any of these explanations. Therapy involves primarily an early recognition of the true condition and the administration of a fat free high protein, high carbohydrate, high caloric diet and the oral administration of calcium salts. Vitamins C and D and the "antipernicious factor" should also be given. This short monograph on endemic sprue is readable and furnishes a creditable addition to the understanding of sprue in nontropical countries. It seems probable that, if endemic sprue is as common in this country as it appears to be on the continent of Europe, wider recognition of the symptomatology and treatment is highly desirable.

Training of the Neurologist and the Psychiatrist. By various authors. Reprinted from the Archives of Neurology and Psychiatry Vols. XXIX and XXX 1933 and Vols. XXXI and XXXII 1934. Paper Pp 102 Chicago American Medical Association [n.d.]

This series of papers, now bound together with a paper cover, appeared in the *Archives of Neurology and Psychiatry* during 1933 and 1934. Five deal specifically with the training of a neurologist, all written by representative men from England, the Netherlands, France, Canada and America. Two other papers concern more definitely the training of a psychiatrist, both written by men in this country. As might be expected, nearly all the authors make a plea for a broad foundation on which to build a knowledge of the complicated structure of neuropsychiatry. Like any of the other branches of medicine, anatomy, physiology and pathology must form the base and to these the neuropsychiatrist adds psychology. The form and function of the normal nervous system must be thoroughly mastered, the pathology of structural disease fully visualized and psychologic reactions widely appreciated before clinical study can be profitable. The trends expressed in this series of papers have recently been embodied in the work of the American Board of Psychiatry and Neurology. All teachers of neuropsychiatry will find much of interest in these selected papers.

Physiopathologie du système nerveux du mécanisme au diagnostic Par Paul Cossa. Préface de Cloris Vincent. Cloth. Price 75 francs. Pp 690 with 193 illustrations. Paris: Masson & Cie 1936.

Nervous activity is treated in this work as a complex of reflexes, the conditioned reflex being given prominent attention with regard to its bearing on psychic activity. The book consists of four parts, the first being a treatment of histology from a functional point of view, including a discussion of the cerebrospinal fluid, its formation, its pressure and its observation. The second part consists in a treatment of the normal and pathologic physiology of the nervous system. In this the sensations are discussed first and next the elementary reflexes, including those of posture and movement. Then the regulation of movement receives attention and is illustrated by alterations in pathologic states. In the third part the so-called vegetative functions are taken up. The regulation of the circulatory system and heat regulation, including the sweating mechanism, receive attention. The fourth portion of the book treats of the nervous system and the psychic phenomena. In this portion it becomes difficult to present much physiology outside of the discussion of conditioned reflexes, although the aphasias are described in this section. The book lacks a comprehensive index and the table of contents is on the last page. It is profusely illustrated and well printed.

This volume is more complete with regard to the anatomic aspects of neurology than regarding the physiologic. The functional ideas are largely descriptive and consist in the enumeration of functions of nervous structures, along with attempts at psychologic interpretation. In this type of work it is difficult to do more than describe, define and classify, which the author has done well. The attempt to combine in one treatment pathologic physiology and anatomy of the nervous system is in itself a considerable undertaking, and the emphasis placed on physiology in the whole treatment is indicative more of the importance the author expects it to play in the future in applied neurology than of its present importance.

The Diabetic Life. Its Control by Diet and Insulin. A Concise Practical Manual for Practitioners and Patients. By R. D. Lawrence. M.A. M.D. F.R.C.P. Physician in Charge Diabetic Department, King's College Hospital. Ninth edition. Cloth. Price \$3. Pp. 231 with 15 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc. 1936.

The fact that this manual has reached its ninth edition speaks for its popularity. It is written for the physician and the patient, but there is entirely too much technical material in it for the layman and it is more adapted to the needs of the general practitioner. The chapters on blood sugar and dextrose tolerance are especially well written and show the author's thorough grasp of the subject. The book is written in a light and clear style. The chapter on the treatment is of a practical nature for the man outside the hospital atmosphere, one who does not have the technical facilities at his disposal. The problem of coma is clearly discussed and ought to serve as a guide to the doctor. The author uses a method of calculating the diets not used in this country, namely, the "line treatment" which is intended to simplify the dietary routine. The latter part of the book deals with diets and recipes common to all manuals. The chapter on technic could stand some more modern changes. On the whole this little volume presents ideas of the general routine work in the field of diabetes in a clear and adequate manner.

De l'utilisation des courbes glycémiques après injection veineuse en pathologie viscérale. Par A. Blon. Paper. Pp. 172 with illustrations. Paris: Librairie E. Le François. 1936.

Following a formidable array of personal dedications, which include parents, professors, associates and layman friends and which occupy sixteen pages of this monograph, the author describes an intravenous method of determining sugar tolerance. He uses 100 cc. of a 30 per cent dextrose solution administered as a drip, taking about thirty minutes to complete the injection. Samples of blood are taken from the finger and analyzed by a modification of MacLean's micro method. The normal controls are few and poorly selected. In cirrhosis of the liver and in kidney lesions the curves are elevated. A few animal experiments are included demonstrating tolerance curves in dogs with an Eck fistula and phosphoric necrosis of the liver. This book offers no help or stimulation to the general practitioner. To the investigator it appears as a superficial and unconvincing presentation of well known facts, with an incomplete and overwhelming Gallic bibliography.

Disinfection and Sterilization. By Ernest C. McCulloch. M.A. D.V.M. Ph.D. Cloth. Price \$5.50. Pp. 525 with 53 illustrations. Philadelphia: Lea & Febiger. 1936.

The early chapters of this book are taken up with such general subjects as the history of disinfectants, the action of sunlight and other physical agents on bacteria, the germicidal properties of body fluids and similar subjects. In the discussion of testing of disinfectants, the author's method of choice is that of the Food and Drug Administration, but adequate descriptions are given of other methods. Special chapters are devoted to sterilization by steam and otherwise, and to milk pasteurization, water purification and sewage treatment. The half dozen chapters given to the disinfectant properties of various chemicals, dyes and gases are well written and elucidating. For the most part the author has presented the subject from an impartial standpoint but he has stated his views clearly on occasion as when he says concerning tooth pastes and tooth powders "some of the claims for germicidal efficiency and ability to dissolve mucin have been greater tributes to the romantic tendencies of the writers of advertising copy than to the veracity of the manufacturers."

The book is written in simple language and the subject matter is brought down to date. It should be in large demand,

for many years have passed since a similar publication appeared. Hundreds of references are given to articles appearing in the scientific literature.

Arbeitsphysiologie der Schwangerschaft. Wehenarbeit—Wehenatmung—Schwangerschaft u. Muskelarbeit. Von Dr. med. habil. Fritz Stähler. Oberarzt an der Universitätsfrauenklinik Frankfurt a. M. Heft 1. Abhandlungen aus der Geburtshilfe und Gynäkologie und ihren Grenzgebieten. Beihefte zur Monatsschrift für Geburtshilfe und Gynäkologie. Herausgegeben von E. Anderes et al. Paper. Price 9.20 marks. Pp. 103 with 33 illustrations. Berlin: S. Karger. 1936.

This small monograph is divided into three parts. The first deals with the work performed by the uterus during labor. The author demonstrated for the first time that a uterine contraction produces 4 calories of energy. During each hour of labor the output is about 42 calories, but when the patient bears down this is increased to 56 calories. An entire labor in a primipara is equivalent to the energy expended during two hours of strenuous work performed by a stone mason or a sawer of wood. In the second part of the monograph is a discussion of respiration during labor pains. The author maintains that during labor there is an increase in pulmonary aeration from 7 to 8 liters to 13 to 20 liters a minute. The third section of the book is devoted to the relationship of pregnancy to muscular activity. It is shown that light work does not affect a normal pregnant woman any more than it does a non-pregnant woman, but that prolonged, heavy work produces serious disturbances. The latter affects the lungs, the heart and the vascular system. Even strenuous housework may produce deleterious effects. The author offers practical suggestions as to how women may avoid unnecessary and strenuous exertion during pregnancy.

Regional Anatomy Adapted to Dissection. By J. C. Hayner. B.S. M.D. Associate Professor of Anatomy, Flower Hospital, New York. Cloth. Price \$6. Pp. 687. Baltimore: William Wood & Company. 1935.

This book is a descriptive account of each of fifty-one regions of the body. It contains no illustrations. It is intended for students and practitioners who, having completed the dissection, wish to review conveniently the anatomy of a particular region. In each region the description is arranged systematically, that is the arteries, veins, lymphatics, nerves and so on, are described one after another. The descriptions are brief, clear and accurate. They do not attempt to furnish a storehouse of information, but only such major facts as are likely to be sought by students preparing for examination or by surgeons preparing to operate in the region. The Basle anatomic nomenclature is used throughout. An extensive index is furnished. The value of the book lies in its arrangement and in the clarity of the text.

Die Grundlagen der unspezifischen Therapie. Von Professor Dr. Wolfgang Weichardt. Paper. Price 8.70 marks. Pp. 83 with 8 illustrations. Berlin: Julius Springer. 1936.

German investigators are still much interested in the physiology and chemistry of foreign protein therapy. In this monograph Weichardt concerns himself chiefly with a summary of his own investigations and a critical review of the contributions of other workers to the subject. The bibliography is chiefly German, but it must be admitted that most of the fundamental studies in this field have been made by German investigators. In the introduction the author says he often hears the remark "Concerning nonspecific therapy, one knows nothing" whereas the speaker would have been more accurate if he had said "Concerning nonspecific therapy, I know nothing." Certainly no one can read this erudite treatise on nonspecific treatment without realizing the great amount of information which has been obtained concerning this problem during the last few years. The author's conception of the biologic principles underlying foreign protein reactions is briefly as follows. He conceives of cell function as activated by secondary products inherent in the body (protoplasmic activation). He points out that most of the split products found in the body stimulate function when experimentally injected in optimal dilution. Such effects are in no way specific. He stresses particularly the nonspecific stimulating effect of various split products on the normal and on the exhausted heart.

The author does not go into the practical application of foreign protein therapy in the treatment of disease. However, there is a brief discussion of the various forms of nonspecific therapy as induced by albumin, histamine and malaria.

The Course of the Oesophagus in Health and in Disease of the Heart and Great Vessels By William Evans. Medical Research Council Special Report Series No 208. Paper. Price 2s 6d. Pp 93 with 66 illustrations. London His Majesty's Stationery Office 1936

This is a brief but excellent description of the roentgenologic anatomy of the course of the esophagus in health and in disease of the heart and great vessels. The observations are the result of an investigation of the course of the esophagus in healthy subjects and in patients from the cardiac department of the London Hospital in whom cardiovascular disease was suspected or known to be present. The relationship of the esophagus to the aortic arch, trachea and bronchus and the pulmonary artery and its branches was determined by the dissection of three cadavers. In one dissected specimen these structures were impregnated with barium and roentgenographed. Radioscopy of all subjects was carried out in the three conventional positions: anterior (postero-anterior), right oblique (oblique I), and left oblique (oblique II). The four esophageal curves or impressions observed in a healthy subject and according to the viscous producing them are designated the aortic arch impression, left bronchus impression, left auricle impression and descending aorta impression. Changes in each of these impressions produced by pathologic conditions are discussed in detail. The author emphasizes the uncertainty of the element forming the left border of the aortic shadow, which calls for caution before the measurement from the aortic arch impression to the left border of the aortic shadow in the anterior position is accepted as the diameter of the aortic arch. The book is well illustrated by excellent roentgenograms and numerous black and white drawings. While much of the data is familiar to experienced radiologists, this work will be of value to less experienced individuals and particularly students.

A Textbook of Histology By Joseph Krafka Jr. Ph.D. M.D. Professor of Microscopic Anatomy University of Georgia School of Medicine Augusta. Cloth. Price \$2.50. Pp 246 with 95 illustrations. Baltimore: Williams & Wilkins Company 1936

This little book is an elementary histology intended to encourage the study of this subject early in college courses with the belief that some understanding of histology is a valuable and necessary part of general education and that it has not been sufficiently studied by students looking forward to the social sciences. The author believes also that it is advisable to offer to those with special aptitudes for histologic study an early opportunity to become acquainted with histologic methods and ideas. The text is brief, simple and clear, as might be expected in an introductory book. It mentions only the larger elements of structure omitting finer details and controversial questions. It regards these structures as parts of the living body and gives due consideration to the physiologic processes in which they are involved and of which they are an expression. The illustrations are simple and for the most part are diagrammatic representations made from preparations in the laboratory where the author's course in histology is given. The use of terms and the spelling are sometimes startling, for example, "mote" for the moats around the circumvallate papilla. "Fascia" is used always as a plural. Apart from these peculiarities the volume can be recommended as a good brief introductory textbook.

Handbuch der mikroskopischen Anatomie des Menschen Herausgegeben von Wilhelm v. Möllendorff. Band III. Haut und Sinnesorgane. Teil 2. Aufg. Bearb. von W. Kolmer und H. Lauber. Paper. Price 150 marks. Pp 782 with 475 illustrations. Berlin: Julius Springer 1936

This constitutes one of the most reliable storehouses of information concerning microscopic anatomy available to students and research workers. It is an exhaustive presentation of the work in this field up to the present time. The whole book is organized in seven volumes, on living matter, the tissues of the skin and sense organs, the nervous system, the digestive apparatus, the blood and lymph systems, respiratory system and endocrine glands and the urogenital organs. Each of these volumes is subdivided into two or three parts making in all eighteen parts of which thirteen have appeared between 1927 and the present time. The present book constitutes part 2 of volume III and deals with the eye and associated structures. It was written by Kolmer of Vienna and Lauber of Warsaw. Kolmer has written the part dealing with the retina (172 pages), including an extensive account (fifty-two pages) of its comparative anatomy and a review of the literature (fifty-four pages)

Lauber has written the larger part of the book (504 pages). In addition to the eyeball, the book deals with the eyelids, the lacrimal apparatus, the connective tissue and blood vessels of the orbit, and the eye muscles. It will be indispensable to anatomists and ophthalmologists. It will also be a source of much pleasure and satisfaction to them.

Slim and Supple. A New System of Swedish Exercises for Young and Old By Barbro Lefler Egnell. Translated from the Swedish by Greta Olsson. M.R.C.S. L.R.C.P. Cloth. Price \$2. Pp 209 with 274 illustrations. New York & London: D. Appleton Century Company Incorporated [n.d.]

In this book there are outlined a number of exercises which have been planned to aid in keeping the body supple. It is also stated that they will be useful in preventing obesity. The material is clearly and simply presented, with a number of well taken photographs. Unfortunately, it is difficult for individuals to get into the habit of doing such exercises in a routine way. Furthermore, any exercises tend to increase appetite and produce overeating, with the result in gain rather than loss in weight. However, for those who wish a detailed outline of exercises for the various muscles of the body, this book will be found useful.

Ideal Birth. How to Get the Finest Children By Th. H. Van de Velde. M.D. Cloth. Price 10s 6d. Pp 296. London: William Heinemann Ltd. 1935

This book is a preposterous conglomeration of established facts with unsupported and discredited theories. One need search no further than the last paragraph of the introduction to find an adequate condemnation in the author's own words, to wit: "I have even laid stress intentionally on theories and possibilities which have not yet obtained scientific support, because these views, even in the absence of cogent proof of their scientific rightness, seem to me of such great value regarded from the didactic standpoint that they may in any case hold good as 'working hypotheses' in life."

Among these theories and possibilities the author includes osteopathy, Christian science, hypnotism, physical culture and a large list of discredited theories about predetermination of sex, including the Unterberger theory of lactic acid douches or sodium bicarbonate douches and the idea that a suitable selection of climate for purposes of procreation is an important element in assuring ideal birth. There are so many good books for the expectant mother that this book, which is neither scientific nor popular but embodies the worst features of both kinds of writing, should have no place in any physician's recommendations to his patients.

Pathologie dentaire Par les Docteurs Bercher, Fargin, Fayolle, Fleury et Lacaille. Tome II. La pratique stomatologique. Publiée sous la direction du Dr. Chompret. Cloth. Price 85 francs. Pp 562 with 280 illustrations. Paris: Masson & Cie 1935

This is the second volume of a nine volume series of textbooks dealing with the whole field of dentistry. Volume I covers all the pathologic changes in the oral cavity except those concerning the teeth, their investing tissues and such tumors as arise from the tooth-forming structures. The latter comprise the subject matter of this book. The subject matter is typically French, that is, the classifications are elaborate, the theoretical considerations are given undue emphasis, and the illustrations are for the most part made from drawings. The references to the literature are predominantly of French origin, and the bacteriologic nomenclature does not conform to current American practice. There are no serious omissions of subject matter. The two sections that are least satisfactory are those treating of caries and pyorrhea. Relatively little attention has been given to recent research in these two important subjects, except for the dietary studies in connection with dental caries, and the point of view is that of two decades ago.

The Study of Anatomy Written for the Medical Student By S. E. Whitnall, M.A. M.D. B.Ch. Third edition. Cloth. Price \$1.75. Pp 113. Baltimore: William Wood & Company 1936

The fact that a third edition of this little book is called for indicates that it has been useful and popular. It gives the student of anatomy and of medicine a good point of view and good ideas of the nature of the subject. It suggests practical considerations for dissection and for study of the relation of gross anatomy to function and disease, and it suggests also interesting books and articles in this field. Like most similar books published in England it devotes a relatively large amount

of space to consideration of examinations. This edition has been slightly modified to express more fully the recommendations of the Curriculum Committee of the General Medical Council of Great Britain, although the book in its earlier editions was thoroughly in accord with the principles expressed by that body. It can be highly recommended as a pleasing and valuable aid to students and teachers of anatomy.

Hauttemperaturen Von Johannes Ipsen. Dr. Chirurg. Dr. Med. Statshospitalet Sønderborg Dänemark. Paper. Price 18 Danish kroner. Pp. 375 with 88 illustrations. Copenhagen. Levin & Munksgaard. Leipzig. Georg Thieme. 1936.

As Dr Ipsen states in his foreword, this book is not a monograph in which the whole subject of skin temperature is considered but rather a record of his own studies and observations based on a quarter of a million observations made on various parts of the body in many different pathologic conditions. Most of the measurements of the "skin temperature" were made with a mercury thermometer held in place and covered with a thin layer of gauze, a smaller number of determinations were made by a specially designed thermocouple, no observations were made by a radiometer such as that used by Du Bois and Hardy.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts. Compensability of Sunstroke or Heatstroke.—The claimant, during the course of his employment as a carpenter, collapsed from sunstroke or heatstroke. The temperature was 106 F. The state industrial commission awarded compensation for temporary total disability and the employer and his insurance carrier brought suit in the Supreme Court of Oklahoma to review the award.

The circumstances under which sunstroke may constitute a compensable injury, said the court, were set forth in *Stanolind Pipe Line Co. v. Davis* (Okla.), 47 P. (2d) 163. In that case it was held that an injury caused by sunstroke arises out of employment when the employee is placed by the nature of his work, in a position or under circumstances subjecting him to a greater hazard of injury by sunstroke than other people in the same vicinity who are not engaged in such work. In other words, the employment must increase the danger of being injured by sunstroke. In the present case, the conditions under which the claimant worked were, in the opinion of the court, such as to accentuate the heat and subjected him to a risk greater than that to which other persons not similarly employed were exposed. The injury was therefore compensable.

The claimant, however, was awarded compensation for temporary disability for a longer period than he had actually proved. The cause was remanded to the commission, therefore, for further hearing as to the actual duration of the claimant's disability.—*Smith v. Zweifel* (Okla.) 54 P. (2d) 649.

Workmen's Compensation Acts. Coronary Thrombosis and Strain.—The claimant, an automobile mechanic experienced, in the course of his employment, a burning pain in the center of his chest. After resting a few minutes he resumed work. The following day, while attempting to loosen a nut under an automobile, and bracing his feet and exerting a steady, hard pull on the wrench he was stricken with excruciating pain about the center of his sternum. A physician to whom fellow workmen took the claimant observed all the signs of acute shock and made a diagnosis of coronary thrombosis. When it appeared that the claimant would never again be able to perform manual work, he instituted proceedings under the Kansas workmen's compensation act, attributing his condition to the strain or effort exerted in attempting to loosen the nut.

The reported case does not clearly indicate the claimant's condition prior to the onset of the attack of coronary thrombosis. Apparently, however, the claimant, even though he testified that he was in good physical condition before the alleged industrial accident in the words of the court, had an

affliction of his heart or circulatory system that eventually might cause his death or render him incapable of manual labor," of which he probably was not aware. The physician in testifying in the compensation proceedings, stated that he diagnosed the claimant's condition as coronary thrombosis, and after defining that term he stated that "the heart muscle becomes weaker on account of lack of blood supply until eventually, either due to some effort or emotion, the safe limit is passed where the excess force of the heart is not sufficient to carry on the normal function, and heart failure, either immediate or delayed in its effects, occurs." He further stated that the sudden pulling and effort the claimant had put on the wrench "aggravated, activated or hastened the condition of coronary thrombosis" and that the claimant was not now able and would never be able again to perform manual work. On cross examination he admitted that "there are many cases in which no physical effort is made at all and it (probably attack of coronary thrombosis) will occur" but that, in his opinion, "it is the last physical effort (the attempt to loosen the nut) that brought it on." The employer offered no testimony. The compensation commissioner awarded compensation and the district court, Sedgwick County, division 3, affirmed that award. The employer and his insurance carrier appealed to the Supreme Court of Kansas.

The appellants argued that what happened to the claimant happened while he was doing his regular work in the manner in which it was ordinarily done, that there was no slipping, falling or other unexpected occurrence, and that there was no accident, in other words that the "heart attack" under the circumstances was not an accident for which the employer and his insurance carrier were liable. In our judgment, answered the Supreme Court, the evidence before the compensation commissioner and later before the district court warranted the conclusion that, even though the claimant unknown to himself "had an affliction of his heart or circulatory system that eventually might cause his death or render him incapable of manual labor," the hard pull on the wrench aggravated his condition and caused a speeding up of a result that might or might not have occurred in the future. Certainly as to the claimant it cannot be said he intended by the pull on the wrench to cause a thrombosis that might cause his death or render him invalid. When he braced his feet and exerted a strong pull on the wrench, so far as he or any one else was concerned, what then happened to him was undesigned, sudden, unexpected and of an afflictive character—or, in shorter form, it was an accident. It arose out of and in the course of his employment and he is entitled properly to compensation.

The judgment of the district court in favor of the claimant was accordingly affirmed.—*Hull v. Etchen Motor Co.* (Kan.) 56 P. (2d) 103.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons. Chicago. Nov. 5-7. Dr. Daniel B. Moss, 547 West Jackson Blvd. Chicago. Secretary.
American Society of Tropical Medicine. Baltimore. November 18-20. Dr. N. Paul Hudson, Department of Bacteriology, Ohio State University. Columbus. Ohio. Secretary.
Central Society for Clinical Research. Chicago. Nov. 6-7. Dr. Lawrence D. Thompson, 4932 Maryland Ave. St. Louis. Secretary.
National Society for the Prevention of Blindness. Columbus, Ohio. Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St. New York. Managing Director.
New York State Association of Public Health Laboratories. Albany. Nov. 6. Miss Mary B. Kirkbride. New Scotland Avenue. Albany. Secretary.
Pacific Coast Society of Obstetrics and Gynecology. Seattle. Nov. 11-14. Dr. T. Floyd Bell, 400 29th St. Oakland. Calif. Secretary.
Radiological Society of North America. Cincinnati. Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building. Syracuse. N. Y. Secretary.
Society for the Study of Asthma and Allied Conditions. New York. Dec. 5. Dr. W. C. Spain, 116 East 53d St. New York. Secretary.
Southern Medical Association. Baltimore. November 17-20. Mr. C. P. Loranz, Empire Building. Birmingham. Ala. Secretary.
Southern Surgical Association. Edgewater Park. Miss. Dec. 15-17. Dr. E. Alton Ochsmier, 1430 Tulane Ave. New Orleans. Secretary.
Southwestern Medical Association. El Paso. Texas. Nov. 19-21. Dr. Orville E. Egbert, 116 Mills Street. El Paso. Secretary.
Texas Ophthalmological and Oto-Laryngological Society. Fort Worth. Dec. 4-5. Dr. Kelly Cox, 1719 Pacific Ave. Dallas. Secretary.
Western Surgical Association. Kansas City. Mo. Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd. Chicago. Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

12 129 256 (Aug.) 1936

- Use of Etiologic Nomenclature of Heart Disease in Hospitals in the United States. O F Hedley Philadelphia—p 129
Survey of Heart Disease Morbidity in San Francisco. J C Geiger J J Sampson Roslyn C Miller and J P Gray San Francisco—p 137
Rheumatic Fever in Northern California. A Christie San Francisco—p 153
*Racial Differences in Incidence of Coronary Sclerosis. C Johnston Durham N C—p 162
Studies on Experimental Coronary Occlusion. Chemical and Anatomic Changes in Myocardium After Coronary Ligation. R Tennant D M Grayzel F A Sutherland and S W Stringer New Haven Conn—p 168
Study of Variations of RST Segment in Experimental Ventricular Trauma. D I Abramson C Shookhoff and N M Fenichel Brooklyn—p 174
Ligation of Coronary Arteries in Javanese Monkeys. III. Further Theoretical Considerations of Changes in Ventricular Electrocardiogram with Illustrative Experiments. A de Waart, C J Storm and A K J Koumans Batavia Java—p 184
Pulmonary Insufficiency with Supernumerary Cusp in Pulmonary Valve. Report of Case with Review of Literature. M Kissin New York—p 206

Racial Differences in Incidence of Coronary Sclerosis
—A study of the necropsy records of 400 patients above the age of 39 years revealed to Johnston that the incidence of marked coronary sclerosis is 24 per cent for white males, 9 per cent for Negro males, 10 per cent for white females and 4 per cent for Negro females. Coronary occlusion with myocardial infarction, either recent or old, was found in 9 per cent of the white males, 4 per cent of the Negro males, 4 per cent of the white females and 2 per cent of the Negro females. The evidence suggests that members of the white race are much more susceptible to coronary sclerosis than are Negroes.

American Journal of Cancer, New York

27 653 882 (Aug.) 1936

- Adenocarcinoma of Cervix. Study of Forty Three Cases. C C Norris Philadelphia—p 653
Origin and Development of Renal Adenomas and Their Relation to Carcinoma of Renal Cortex (Hypernephroma). A J Trinkle Minneapolis—p 676
Adenoma of Salivary Glands. P N Harris Boston—p 690
Genesis of Giant Cell Tumors. Notes. H Bergstrand Stockholm Sweden—p 701
Titration and Biologic Assay of Vitamin C in Tumor Tissue. R R Musulin Ethel Silverblatt and C G King Pittsburgh, and Gladys E Woodward Philadelphia—p 707
Effect of Various Kinds of Blood Serums on Viability of Transplantable Tumors. A Sugita and S R Benedict New York—p 712
Correlation of Matched Tumors. F Bischoff and M Louisa Long Santa Barbara, Calif—p 726
Neurogenic Sarcoma of Peritoneal Cavity. S Sailer New York—p 79
Spontaneous Cure of Congenital Recurring Connective Tissue Tumor. B R Shore, New York—p 736
*Some Clinical Features of Carcinoma of Stomach. J F Minnes and C F Geschickter Baltimore—p 740

Relation of Renal Adenomas to Hypernephroma
—Trinkle made a study of the origin and development of renal adenomas. His material consisted of numerous examples of dilatation of tubules in subcapsular wedge-shaped areas of atrophy (believed to represent the starting point of cysts and adenomas) six simple cortical cysts, five small papillary cysts, thirty seven cystadenomas, three alveolar adenomas, four tubular adenomas and four small but typical hypernephromas that had not metastasized. This material was studied microscopically in an effort to work out the origin and development of the adenomas and to determine whether there is any evidence

that adenomas may develop into hypernephromas. He found that adenomas of the kidney occur most frequently in kidneys which are the seat of vascular disease. They also occur with the greatest frequency in the advanced years of life. These facts suggest that adenomas are the result of a proliferative reaction on the part of the tubules, which have been cut off from their primary blood supply. In papillary cystadenomas, after occlusion of the afferent arteriole, the glomerular tuft becomes avascular. In the majority of instances the corresponding tubule undergoes atrophy, but occasionally it continues to grow and becomes hyperplastic. This change is dependent on a renewed blood supply. As a result of hyperplasia, epithelial folds are produced which project into the lumen, converting the cystic tubule into a papillary cyst. Connective tissue of the renal stroma grows into the epithelial invaginations, forming a supportive stalk. Growth which is of the central expansive type, converts the tumor into a solid structure. As the tumor compresses the adjacent renal tissue, a fibrous capsule develops. The connective tissue of the papillary processes may fail to be carried along with the proliferating epithelium, leaving the cells lying in long cords. Occasionally masses of budded-off epithelium differentiate into tubules. These processes account for the variations in structure observed in the larger adenomas. Adenomas suggest that deficient oxygen may be a factor, but not the only factor. Large adenomas of the papillary type may show areas in which the structure is indistinguishable from that of hypernephroma. This type of adenoma represents a true transition stage. The similarity in structure between certain early hypernephromas and large papillary adenomas supports the theory that hypernephromas develop from adenomas.

Clinical Features of Carcinoma of Stomach.—Minnes and Geschickter believe that, regardless of the clinical features, all cases of carcinoma of the stomach are unfavorable from the standpoint of curability. In 370 cases followed more than five years or until death there were but 35 per cent of five year cures. Of 541 cases, slightly more than 75 per cent occurred in men and an equal percentage occurred between the ages of 44 and 66 years. Fifty per cent of the tumors occurred in the pyloric region, 20 per cent on the lesser curvature and the remainder elsewhere in the stomach. The duration of symptoms varied between six months and one year. In the dyspeptic group of cases the symptoms varied from gastric discomfort to acute pain accompanied by nausea and vomiting with occasional hematemesis. In the cachectic group there was progressive weakness, fatigue and loss of energy. In the third ulcerative group there was a typical history of gastric ulcer with symptoms changing in character and severity after a period of six or more months. The most conspicuous clinical change (91 per cent) was marked and rapid loss of weight, averaging 30½ pounds. A palpable mass in the epigastrium was found in 236 of the 541 cases. Occult blood was found in the stool in 58 per cent of 193 cases in which the test was performed. Analysis of the gastric contents in 339 cases showed achlorhydria in 64.6, hypochlorhydria in 25.9, normal values in 6.7, and hyperchlorhydria in 2.6 per cent. In 197 cases in which roentgen examinations were recorded, organic lesions were revealed in 157 cases. In thirty-four cases neither an organic lesion nor disturbance in the function of the stomach was disclosed and in six cases disturbances in motility only were observed. Laparotomy should be performed in cases that are clinically doubtful.

American Journal of Ophthalmology, St. Louis

19 645 738 (Aug.) 1936

- Lipemia Retinalis. Report of Case. J H Allen and W A Howard Iowa City—p 645
Analysis of Recent Studies on Etiology of Trachoma. P Thygeson Iowa City—p 649
Screen Test and Its Applications. J W White New York—p 653
Superior Rectus Fascia Lata Slings in Correction of Ptosis. C A Dickey San Francisco—p 660
Treatment of Trachoma. A F Lenzen and H S Gradle Chicago—p 665
Severe Tuberculosis of Anterior Segment of Eye. E V L Brown Chicago—p 668
Scientific Bases for Selection of Bifocal Lenses. A L Anderson Minneapolis—p 675
Concentration of Lysozyme in Tears in Acute and Chronic Conjunctivitis. Note on Source of Lysozyme of Tears. R Thompson and E Gallardo New York—p 684
Anisokonia. W L Hughes Hempstead L I N Y—p 686

American Journal of Physiology, Baltimore

116 495 726 (Aug.) 1936 Partial Index

Cardiac Output in Man Changes in Alveolar Oxygen and Carbon Dioxide Tensions During Rebreathing and Bearing of These on Triple Extrapolation Method of Estimating Cardiac Output. J. S. Donald Jr. and C. J. Gamble, Philadelphia—p. 495

Distention a Stimulus for Uterine Growth in Untreated Ovariectomized Rabbits. S. R. M. Reynolds and S. Kaminster, Brooklyn—p. 510

Effect of Restriction of Inorganic Salts in Diet on Organ Growth. Pearl P. Swanson, New Haven, Conn. and A. H. Smith, Ames, Iowa—p. 516

Cochlear Response as Index to Hearing. W. P. Covell, San Francisco and L. J. Black, Berkeley, Calif.—p. 524

Calcium and Protein Changes in Serum During Sleep and Rest Without Sleep. N. R. Cooperman, Chicago—p. 531

Coagulation Defect in Peptone Shock. Consideration of Antithrombins. A. J. Quick, Milwaukee—p. 535

Calculation of Cardiac Output from Blood Pressure Measurements Before and After Meals. H. C. Bazett, J. C. Scott, M. E. Maxfield and M. D. Blithe, Philadelphia—p. 551

Adaptive Secretion of Glands of Jejunum. T. L. Bourns, E. S. Nasset and R. A. Hettig, Rochester, N. Y.—p. 563

*Passage of Visible Particles Through Walls of Blood Capillaries and into Lymph Stream. Madeleine E. Field and C. K. Drinker, Boston—p. 597

Pacemakers of Human Brain Waves in Normals and in General Paralytics. H. Hoagland, Worcester, Mass.—p. 604

Hypertension from Constriction of Arteries of Denervated Kidneys. D. A. Collins, Minneapolis—p. 616

Effect of Brewers' Yeast on Blood Production. I. A. Manville and J. W. Grondahl, Portland, Ore.—p. 626

Influence of Pylorus on Secretion of Acid by Fundus. C. M. Wilhelm, F. T. O'Brien and F. C. Hill, Omaha—p. 685

Passage of Particles Through Walls of Blood Capillaries—Experiments carried out by Field and Drinker show that visible particles of many different sizes and physical characteristics pass through the uninjured walls of blood capillaries and frequently into lymphatics. Graphite with a particle size of 1 micron has been observed to leave blood capillaries in the tongue and web of the frog. Calcite with a particle size of from 1 to 2 microns behaved similarly in the mesenteric capillaries. The material could easily be found in lymph from the foot of the frog and also in lymph from the foot of unanesthetized dogs. Pneumococci injected intravenously in the rabbit appear rapidly in thoracic duct, cervical and foot lymph. Erythrocytes readily become extravascular and are found in the lymph if the part is exercised or if the venous pressure is increased. No extra leakage of blood proteins accompanies this escape of red cells. Microfilariae 40 microns in length and 5 in breadth readily leave blood capillaries and enter lymphatics. These organisms are large and highly motile. Their escape from blood capillaries is accomplished without injury to the vessels involved. There is no evidence as to favored points of particle egress, and the final nature of the passage is not known.

American Journal of Psychiatry, New York

93 1 248 (July) 1936

Presidential Address. Past, Present and Future Problems in Psychiatry. C. O. Cheney, New York—p. 1

Clarence O. Cheney, M.D., President, 1935-1936. Biographic Sketch. L. E. Hinsie, New York—p. 17

Sigmund Freud. His Work and Influence. C. P. Oberndorf, New York—p. 21

Neurosemantic and Neurolinguistic Mechanisms of Extensionalization. General Semantics as Natural Experimental Science. A. Korzybski—p. 29

*Alzheimer's Disease. So Called Juvenile Type. Report of Case. G. A. Jervis and S. E. Soltz, New York—p. 39

Sleep Induced by Sodium Amytal. An Abridged Method for Use in Mental Illness. S. B. Broder, Chicago—p. 57

Mechanisms of Psychoallergy. W. Marshall Appleton, Wis.—p. 75

Metabolism of Brain Spinal Cord and Meningeal Tissue. S. B. Wortis, New York—p. 87

Psychoneuroses and Neuroses. Review of 100 Cases with Especial Reference to Treatment and End Results. J. C. Taskin, Philadelphia—p. 107

Mental Disease Among Native and Foreign Born Whites in New York State. B. Malzberg, Albany, N. Y.—p. 127

Relationship Between Cerebrospinal Fluid Sugar and Blood Sugar in Untreated Neurosyphilis. P. G. Schube, Boston—p. 139

Contribution to Psychopathology of Alzheimer's Disease. D. A. Boyd, Ann Arbor, Mich.—p. 155

Comments on Mental Health Administration. W. L. Treadway, Washington, D. C.—p. 177

Delirious Episodes Associated with Artificial Fever. Study of 200 Cases. F. G. Ebaugh, C. H. Barnacle and J. R. Ewalt, Denver—p. 191

Alzheimer's Disease—Jervis and Soltz think that Alzheimer's disease is to be considered a definite clinicopathologic entity. Of ten cases reported in the literature occurring at

an age prior to the presenile stage, seven presented either insufficient pathologic and clinical elements or typical pathologic changes but noncharacteristic clinical symptoms. Their inclusion in the group of Alzheimer's disease cannot therefore be made without unduly stretching the original conception of the malady. In addition to the case described in this presentation, three others have been reported in the literature of typical Alzheimer's disease from both the pathologic and the clinical aspects, in which the age limit varied at the most between 37 and 41 years. The narrow variation of the age limit and the small number of these cases justifies their conservative attitude toward the creation of a nosologic variety termed "juvenile form of Alzheimer's disease." The doubt cast on the generally accepted conception of Alzheimer's disease as a presenile psychosis, doubt based on the occurrence precisely of the disease in its so-called juvenile form, is therefore somewhat premature. Additional evidence is needed for such a conclusion. A report of a case in which all clinical and pathologic data, exclusive of the age, correspond to Alzheimer's disease, illustrates the expressed ideas.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

36 145 292 (Aug.) 1936

Roentgenologic Considerations of Lymphoblastoma. I. Roentgen Pulmonary Pathology of Hodgkin's Type. C. B. Peirce, H. W. Jacob and R. C. Hildreth, Ann Arbor, Mich.—p. 145

*Id. II. Roentgen Therapy of Hodgkin's Disease. H. W. Jacob, C. B. Peirce and R. C. Hildreth, Ann Arbor, Mich.—p. 165

Unusual Complications of Lymphoblastoma and Their Radiation Treatment. A. U. Desjardins, H. C. Habsin and C. H. Watkins, Rochester, Minn.—p. 169

Orderly Procedure in Roentgen Diagnosis of Intrathoracic Tumors. W. H. Stewart and H. E. Illick, New York—p. 180

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Roentgen Therapy of Hodgkin's Disease—From a survey of the clinical results of irradiation in 161 cases of Hodgkin's disease within the past decade Jacob and his associates conclude that 1. No unfavorable biologic changes were observed following irradiation by any of the methods employed. 2. Roentgen therapy in any degree has induced definite extension of life, as compared with the untreated patients. 3. Systemic irradiation has been no more effectual than repeated local irradiation in prolongation of the total duration of the disease in those cases now known to have died. 4. Future figures, more favorable to systemic irradiation, derived from that group of patients still under observation, and who have already exceeded the life span as determined from the known dead, may be expected. 5. Systemic irradiation of all lymphoid areas is the method of choice, in the light of symptomatic response.

March Foot—According to Elward, the disorder of the metatarsal bones that is manifested by painful swelling of the forefoot with concomitant spontaneous fracture of one or more of these bones, is called generally in English "march foot," presumably because of its supposed association with military activities. He concerns himself chiefly with the imperative necessity for careful differential diagnosis between (a) sarcoma of the bone, (b) Köhler's disease and (c) other pathologic and traumatic conditions. Of these the differential diagnosis from sarcoma is by far the most vital. For example, Dodd not long ago reported a case in which owing to an erroneous diagnosis of sarcoma a patient with Deutschländer's disease (march foot) submitted to an amputation of the foot, while in one of Strauss's cases excision of the metatarsal was performed for the purpose of verifying a doubtful diagnosis. In view of the customary absence of a history of trauma the presence of a sarcoma may very readily be assumed but closer study of the roentgenogram fails to reveal the so-called fanlike sun ray structure generally regarded as pathognomonic of osteogenic sarcoma. Serial

studies at weekly intervals usually serve to reveal the true nature of the disorder. The latter should likewise be differentiated from Köhler's disease, which attacks the distal ends of the metatarsals as well as from alterations in epiphyseal zones resulting from late rachitic changes, syphilitic diseases of bone, all other types of fractures and incipient flatfoot. Conservative treatment is indicated in the great majority of cases of the disease. Rest in bed, baking baths, massage and occasionally exercises designed to restore tone of exhausted muscles of feet and legs have all proved highly efficacious as therapeutic measures. The author gives the histories of two cases. The first case is believed to be the acute form because of the history of onset following sudden and unaccustomed strain in using a spading fork. This type is properly called forced foot (pied force). The second case represents the chronic form wherein the symptoms are not definitely dated but apparently follow prolonged strain as must necessarily ensue in a patient of excessive weight (200 pounds, or 91 Kg, in this case) who follows an occupation requiring standing for prolonged periods. The episode of high heeled shoes is possibly a factor, but probably a minor one. This type is properly termed overloaded foot (pied surcharge).

American Review of Tuberculosis, New York

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Incidence of Intestinal Tuberculosis B L Brock and G O Perry Waverly Hills Ky —p 356
Role of Non Acid Fast Rods and Granules in Developmental Cycle of Tubercle Bacillus M C Kahn and J F Nonidez New York —p 361
Treatment of Tuberculosis of Skin by Heat Preliminary Report E M Rusten Minneapolis G R Duncan E S Mariette Oak Terrace Minn and D D Turnachiff Minneapolis —p 383
Simultaneous Bilateral Spontaneous Pneumothorax Complicating Pneumococcosis Report of Case with Review of Literature L G Glickman and B H Schlomovitz Milwaukee —p 390
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Intensity of Tuberculin Reaction and Frequency of Demonstrable Tuberculous Lesions as Observed in Kingston Jamaica C W Wells and H H Smith Kingston Jamaica B W I —p 425
Bronchogenic Carcinoma Case Report J K Miller Wallum Lake R I —p 433

Pregnancy and Tuberculosis—After a perusal of collected studies by qualified observers who have investigated the risk of pregnancy in the tuberculous from various sides as to the type of the disease stage and end results, and with the author's own experience of long observation of many pregnant tuberculous patients Castlen is of the opinion that the risk of pregnancy for a tuberculous woman is no greater if she is properly treated, than for the nontuberculous pregnant patient. Those who become pregnant should have sanatorium care under proper careful direction and, if possible some form of selective collapse therapy should be carried out. After labor, treatment for tuberculosis should be carried on vigorously and no successful form of therapy be discontinued too early and in any event, only after careful study by one who is qualified in the handling of such cases. Therapeutic abortion is rarely if ever indicated in these patients and certainly should not be carried out after the fourth month of gestation, when the operative risks become practically as great as those of full term delivery. The question of pregnancy and tuberculosis should be given more attention not only by those who practice the treatment of tuberculosis but by that larger group the obstetricians to the end that the lives of these women may be preserved and so that the lives of a large number of their infants may be saved. With a better and more intelligent understanding of the problem and with proper management, physicians will see these young women emerge from an experience, once looked on by most of the profession as most dangerous and unjustifiable almost if not quite as safely as the normally pregnant woman.

Treatment of Tuberculosis of Skin by Heat—Owing to the appearance of tuberculous cutis on exposed areas with exacerbations during cold weather and based on the work of

Duncan and Mariette on artificial fever in pulmonary tuberculosis, it occurred to Rusten and his associates to apply local heat and general hyperpyrexia for these lesions. The death point temperature of these organisms is so high that local necrosis would occur if the skin should be treated to this level with local heat. General hyperpyrexia at death point temperature of the bacilli is incompatible with life of the host. The method of treatment consisted of general hyperpyrexia in one case and local heat with the infra-red lamp in all cases. When local treatment was used the temperature of the skin was the highest that could be tolerated by the patient. Occasionally vesiculation occurred. The daily duration of treatment varied from one half hour to four hours or more. A variety of types of tuberculosis of the skin were treated by these methods. Biopsies were taken before treatment and guinea-pigs were inoculated with ground tissue or pus in all cases. Tissue inoculations were made on culture mediums, and ground tissue was injected into cold-blooded animals in some cases. Necropsies of these animals in six weeks were negative for tuberculosis. Ground biopsies of the same lesions were inoculated on Herrold's glycerin-egg medium after the specimens had been treated with 3 per cent hydrochloric acid and neutralized with sodium hydroxide. These cultures so treated were kept at room temperature and at 98 F, and resulted in no growth in eight weeks. Temperatures were taken with thermocouples at twenty-five exposed areas of the skin of three patients reported and a group of controls. The results of these readings indicated that there was little if any difference between skin temperatures of the controls and these cases, in spite of the erythrocyanotic appearance and clammy feel. The chronic or proliferative types show improvement which does not offer a great deal of encouragement over previous reported methods. The acute type mainly papulonecrotic tuberculosis erythema induratum and inoculation types, respond well to this mode of therapy. The results may be due to the inhibition of the growth of tubercle bacilli in the primary focus when generalized hyperpyrexia is used. This inhibition may be reflected in fewer lesions or absence of lesions for a period. The local heat, which was used in all cases, causes hyperemia, phagocytosis and absorption. Inhibition of the micro-organism must be considered. However, the resistance of the host is probably the most important factor. The response in the reported cases was such that this type of therapy may well prove a valuable adjunct in the treatment of tuberculosis of the skin.

Anatomical Record, Philadelphia

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B. M. B. Medical College

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Archives of Dermatology and Syphilology, Chicago

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and G H Fonde Philadelphia.—p 478
- *Allergic Bacterial Dermatoses Their Diagnosis and Treatment with
Autogenous Vaccine Preliminary Report T N Graham and E F
Traub New York.—p 484

Scleroderma Treated with Posterior Pituitary Extract

—According to Oliver and Lerman, many authors have considered that there is a relationship between scleroderma and endocrine disorders of various kinds in fact, every one of the endocrine glands has been mentioned in association with scleroderma. After reviewing the literature on the relationship between scleroderma and the different endocrine glands, the authors point out that if there is an etiologic relationship between scleroderma and the glands of internal secretion, it is probable that in some cases at least there are various other causative factors such as trauma, syphilis, nervous shock, exposure to cold and disturbances of the sensory nerves, especially in association with hemiatrophy corresponding to the distribution of the fifth cranial nerve. In many cases the sympathetic nervous system undoubtedly is involved. The method of treatment in the authors' series of cases consisted of daily injections of posterior pituitary—in most instances an ampule of 1 cc of solution of posterior pituitary. The injections were continued for from a few weeks to a month at a time, followed by an interval of a month or more without treatment. Some of the patients were started on daily injections of 1 cc. of pancreatic extract for a month as a control series. The authors report the clinical histories of three cases one of the morphea type, one of the linear band type and one of the diffuse type. They summarize their observations as follows. Twenty patients with scleroderma of different types were treated with daily injections of solution of posterior pituitary. In three cases of morphea some or all of the lesions disappeared completely, leaving slight pigmentation. In the others varying degree of improvement were shown. In two cases of the bandlike type improvement was marked. In a case in which the condition was associated with a severe degree of hemiatrophy of the face, improvement at first was considerable but no further improvement was noted after the first few months. Naturally the atrophy was unchanged. In five cases of sclerodactylia associated with diffuse scleroderma of the face and neck, marked improvement was noted in the face and neck, the skin becoming definitely softer. In the other three cases of a similar condition some improvement was noted. This improvement was manifested in several instances by ability to wrinkle the forehead and disappearance of the masklike expression characteristic of this condition. In one of these cases the skin of the neck became normal in appearance except for pigmentation. In three cases of sclerodactylia marked softening was noted in the skin of the hands as well as increased mobility and relief from pain. In two cases the improvement was so

slight that continuance of the treatment was not thought worth while. Sympathectomy was performed on the left side, with excellent immediate results in one of the last-mentioned cases.

Allergic Bacterial Dermatoses—Certain dermatoses, including chronic urticaria, erythema toxicum, erythema multiforme and chronic eczema, Graham and Traub say, have been acknowledged in a number of instances to be of allergic bacterial origin. They studied a group of thirty cases of involvement of the skin which they considered to be of allergic bacterial origin. They consisted of twenty cases of urticaria, five of erythema multiforme, two of erythema toxicum, two of eczema and one of prurigo. In twenty of the thirty cases, streptococci were obtained on culture from foci of infection. Twelve of these patients, who showed a positive cutaneous reaction to vaccine prepared from the culture, were treated with the vaccine. With regard to three of the patients who were treated, a focus of infection was removed, tonsils in one instance and abscessed teeth in the other two. Each of the three patients showed gradual improvement, with a final disappearance of the eruption long after the removal of the focus. One patient was observed for fifteen months after treatment and there was no recurrence. To determine how much credit for these results should be given to the removal of the foci and how much to vaccine therapy requires further study. Of the other nine patients treated, five showed some improvement, which was only temporary, and four showed none. These observations, the authors believe, demonstrate the importance of the role of focal infection in causing allergic dermatoses. Removal of proved foci has apparently been effective in treatment. Vaccine therapy, which in a number of cases favorably influenced the course of the eruption, failed to effect a cure. The authors results are necessarily inconclusive, as for this preliminary study they limited their observations to infections due to streptococci, also the number of cases studied is small. They believe that this form of therapy has distinct possibilities.

Archives of Ophthalmology, Chicago

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- *Benzyl Cinnamate in Treatment of Trachoma and Corneal Opacities
Clinical and Experimental Results J Jacobson Paris France.—
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- Blue Appearance of Fundus Caused by Prolonged Ingestion of Methyl
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- *Cataract Following Dinitrophenol Treatment for Obesity W D Horner
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- Multiple Gold Foreign Bodies in Cornea C E McDannald New York.—
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I Goldstein New York.—p 465
- Primary Zonular Opacity of Cornea W J Harrison Philadelphia.—
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- Fibrosarcoma of Eyelid Report of Case A L Morgan Toronto.—
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- Effect of Intra Ocular Concentration of Typhoid Antibodies on Experi-
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- Retrobulbar Injection of Anesthetic Within Muscular Cone (Cone Injec-
tion) W S Atkinson Watertown N Y.—p 494

Benzyl Cinnamate in Treatment of Trachoma and Corneal Opacities—Jacobson declares that benzyl cinnamate has been found of great value in the treatment of trachoma. In an analysis of 244 cases of refractory trachoma there were fifty-three cases of slight improvement and 139 of marked improvement. The army surgeons reported improvement in 73 per cent of 113 cases. In the course of the author's mission in Tunis he noted a few cases of leukoma of gonorrheal origin in which the opacity had appreciably regressed under the influence of the injections of benzyl cinnamate. He has studied the properties of this drug. It is antitoxic and causes vasodilatation. It provokes leukocytosis also. However one has no right to conclude that the therapeutic action of the drug is

the result of these properties. But treatment with benzyl cinnamate causes pronounced vascularization, with vasodilatation at the site of the pathologic lesion and regression of the exudate and the chronic inflammation. Ophthalmologists have the added privilege of being able to observe this phenomenon in all its details with the slit lamp. The injection does not produce any general or local reaction, the tolerance is perfect. A focal reaction, which results from the hyperemia, is noted at the site of the lesion. This hyperemia differs from pathologic hyperemia in that it is not accompanied with exudation.

Cataract Following Dinitrophenol Treatment for Obesity—Horner believes that the total number of cases of cataract after the administration of dinitrophenol is more than sixty and probably under a hundred. New cases are still developing. For example, he saw four new patients during February 1936, making a total of eleven cases, all of bilateral involvement. Cataracts appear to follow the therapeutic administration of dinitrophenol in from 0.1 to 1 per cent of cases. The mechanism is at present unknown. The administration of this drug should be withheld pending further study. Cataracts identical in appearance with these may develop in women who have not taken dinitrophenol. A series of seventeen extractions by three different methods is reported, and vision was 0.8 or better in 82.3 per cent of the cases, without secondary operation.

Arkansas Medical Society Journal, Fort Smith

33: 63-80 (Sept.) 1936

Diphtheria. Our Problem. F. A. Corn Jr. Lonoke—p. 63
Care of the Normal New Born. R. A. Strong. New Orleans—p. 64
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California and Western Medicine, San Francisco

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Pediatrics. Some Present Day Trends. S. J. McClendon. San Diego—p. 125
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Epitheliomas of Skin. Some Clinical Notes. D. W. Montgomery. San Francisco—p. 134
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Heat Producing Appliances. Their Comparative Value in Treatment of Prostate Infections. J. B. Herring. San Francisco—p. 140
Clinical Studies with Protamine-Insulin. B. Smith. Los Angeles—p. 144
New Approach to Resection of Cancer of Colonic Flexures. C. L. Hoag. San Francisco—p. 148
Adrenal Endocrinopathies in Childhood. H. C. Shepardson. San Francisco—p. 153
Electrocardiography. Its Value to the General Practitioner. H. M. F. Behneman. San Francisco—p. 158
Cancer of Rectum. W. H. Daniel. Los Angeles—p. 161

Clinical Studies with Insulin Protamine—According to Smith, diabetic patients who have used regular insulin for some time before beginning insulin protamine often show an acute diabetic disturbance that may last from three to five days. Loss of control to some degree may immediately follow any slight change in unit dose or in time of insulin protamine injection. In the group of cases here reported, it was found that the insulin protamine had a unit value somewhat less than U-40. Usually from 4 to 8 units more was required with the insulin protamine solution. Since the zinc and the calcium combinations have been used there is evidence that these are more nearly the same in unit value as regular insulin of U-40 strength. Observations indicate that an interval between insulin protamine injections of twelve hours gives satisfactory results rather than giving the dose in relation to meals. Change from insulin protamine to regular insulin and back again to insulin protamine can be done without serious disturbance in control. All patients expressed a feeling of increased endurance and relief of periodic fatigue soon after beginning insulin protamine even before satisfactory control is obtained. Hypoglycemia may be difficult to correct because of the continued absorption of insulin and may appear at the beginning of the change to insulin protamine when regular insulin is taken at one or more periods. Subnormal values for blood sugar may be found without definite symptoms. This may require more frequent blood sugar tests especially in patients

with some cardiovascular complication. The more even blood sugar control should give greater safety for these patients in that there should not be the rapid drop in blood sugar that was occasionally found with regular insulin. Patients using insulin protamine should be warned of the necessity of keeping the preparation in the icebox after mixing, and to shake the bottle before each withdrawal of a dose. The combinations of insulin with protamine buffer, together with either zinc or calcium, give a more even blood sugar control throughout the full twenty-four hours than has been possible with regular insulin alone in cases of severe diabetes. Clinical observations for longer time will give the full picture of value for these new preparations, but the controls secured in the months they have been used offer great hope for the future.

Resection of Cancer of Colonic Flexures—Hoag shows that the new method of operative approach by a pericostal-transabdominal incision parallel to the actual nerve supply gives an excellent exposure of the colon and its flexures and permits their more rapid and complete removal. The use of this incision permits resection and reestablishment of continuity of the bowel rather than a permanent colostomy for a greater number of patients. It is hoped that the procedure will be a potent factor in reducing the morbidity and mortality of certain lesions of the colon. Recent investigations of the innervation of the abdominal and rectus muscles have shown it to be different from that long accepted by the older anatomists.

Georgia Medical Association Journal, Atlanta

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Fundamental Aspects of Diagnosis and Treatment of Anemia. W. B. Castle. Boston—p. 307
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Indiana State Medical Assn. Journal, Indianapolis

29: 409-512 (Sept.) 1936

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Causes of Headache. C. P. Emerson. Indianapolis—p. 415
*Method for Determining Proper Time for Rib Resection in Empyema Thoracis. Statistical Study of 123 Cases Prior to Its Use and Twenty Seven Cases Since Its Adoption. J. K. Berman. Indianapolis—p. 419
Some Common Surgical Complications in Senile Cataract. C. P. Clark. Indianapolis—p. 422
John Shaw Billings and the Centenary of the Army Medical Library. E. F. Kiser. Indianapolis—p. 424

Proper Time for Rib Resection in Empyema—Berman shows that after localization of empyema there is little or no movement of the mediastinum or diaphragm or compressed lung margin on the affected side, with increased movement on the normal. Using this method as his criterion for surgery, he operated as soon as fixation occurred. Fluoroscopic examination is made on all patients on admission and then every other day until surgery is indicated. He used this method in twenty-seven cases and found that localization will occur on the seventh to the tenth day and, although the pus is thick in most of these it is very thin in some. If the general condition is grave, a blood transfusion is given prior to operation. After localization, the second most important consideration in the treatment of an abscess is adequate drainage. Rib resection was done in 100 of the 123 cases studied with a mortality of 4.9 per cent. The so called closed method with catheter drainage was employed in seven and repeated aspirations were done in sixteen. The mortality in this group was 15.4 per cent. These results, together with the fact that the treatment of empyema is essentially the treatment of an abscess after localization, led the author to adopt open operation with rib resection as the proper type of surgical procedure. He does a rib resection over the lower portion of the empyema. After the pleural cavity is entered a finger is introduced gently to break down partitions. Then all large clots of purulent debris are aspirated or manually removed. A nine-sixteenths inch rubber tube is introduced and anchored to the skin with a silkworm gut suture and a safety pin is placed through the tube to prevent aspiration. Whereas formerly irrigations were done daily the author has now dis-

continued all irrigations Dressings are changed as required, but always as infrequently as possible. After the seventh day the silkworm-gut suture is cut and the tube is allowed to "work its way out" This occurs as the result of rapid filling in of granulation tissue and some lung expansion If the tube is not out by the tenth day, a fluoroscopic examination is made. This will disclose fluid levels or "pockets" with fluid The time required for the obliteration of an empyema cavity may be exceedingly variable One cannot be dogmatic about the length of time during which drainage should be continued This depends on the fluoroscopic examination and the character of the pus After the tube has been removed, a petrolatum gauze dressing is applied Each day for approximately one week the crusts over the granulating sinus are removed and the tract is gently probed This is done so that healthy granulations are established and that local "pockets" may not form

Journal of Bacteriology, Baltimore

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- Curdled Blood Simply Prepared Fluid Medium for Cultivation of Anaerobes E M Pullar Melbourne Australia.—p 131
Semisolid Mediums for Cultivation and Identification of Sporulating Anaerobes R S Spray Morgantown W Va.—p 135
Essential Growth Factors for Propionic Acid Bacteria I Sources and Fractionation E L Tatum W H Peterson and E B Fred Madison Wis.—p 157
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- Unsaturated Fatty Acid Fraction of Pig Pancreas Which Inhibits Growth of Chicken Sarcoma O M Helmer, Indianapolis.—p 333
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*Studies on Inflammation VII Mechanism of Increased Capillary Permeability A Critique of Histamine Hypothesis V Menkin Boston.—p 485

Mechanism of Increased Capillary Permeability in Inflammation.—Menkin's present investigation deals with whether one or more substances can be obtained from inflammatory exudates which when introduced into normal cutaneous tissue, will induce local vasodilatation and an increase in the permeability of the capillary wall Furthermore the properties

of the active fractions that have been obtained from inflammatory exudates have been compared with histamine in an endeavor to test Lewis's hypothesis The experiments indicate that a diffusible crystalline-like material capable of increasing capillary permeability is present in inflammatory exudates By appropriate tests this active principle has been shown to lack the properties characteristic of histamine, thus apparently ruling out the latter as of any primary significance in inflammation Studies in a preliminary communication suggest that the twofold increase in potassium content found in exudates, as compared to blood serum, even as early as the first few hours of the inflammatory reaction, may be connected in some way with the active factor Organic compounds other than histamine, including various products of proteolytic breakdown, such as amino acids, usually found increased in concentration in an exudate, likewise seem to have some effect in augmenting the permeability of capillaries during the course of the inflammatory process The active factor manifests no property in common with histamine or presumably with the hypothetical H substance assumed to be closely related to histamine. This is indicated by the difference between the tissue staining pattern of the exudate or of its active fraction and that of histamine and opposite effects by histamine and the active factor found in exudates on the tonicity of the isolated strip of guinea pig intestine. The observations presented do not substantiate Lewis's hypothesis of histamine or of its closely related H substance as the primary cause of increased capillary permeability in inflammation The present studies are being continued in an endeavor to free of its impurities and to identify the active crystalline-like material isolated from an inflammatory exudate.

Kansas Medical Society Journal, Topeka

37 353 396 (Sept) 1936

- Clinical Use of Insulin with Protamine Buffer (Protamine Insulinate) H E Marchbanks and Flora Acton Pittsburgh.—p 353
Severe Mental Disturbances Associated with Organic Disease W C Menninger Topeka.—p 356
Modern Trends in Deep X Ray Therapy with Particular Reference to Higher Voltages C L Randall Kansas City Mo.—p 363

Kentucky Medical Journal, Bowling Green

34 385-434 (Sept) 1936

- Meningo-Encephalomyelitis (Poliomyelitis) V E Simpson, Louisville.—p 419
Cautery Pneumectomy for Chronic Lung Abscess Case Report K D Winter Louisville.—p 431

Medicine, Baltimore

15 129 306 (May) 1936

- *Asphyxia as Consequence of Nitrous Oxide Anesthesia with foreword by Y Henderson C B Courville Los Angeles.—p 129
Interrelation of Cerebrum and Cerebellum in Regulation of Somatic and Autonomic Functions J F Fulton New Haven Conn.—p 247

Asphyxia as Consequence of Nitrous Oxide Anesthesia.—Courville became interested in the asphyxial effect of nitrous oxide anesthesia when he saw a comatose patient who presented generalized muscular twitchings and rigidity, which developed after a period of apnea while under this anesthetic. The striking and characteristic changes in the nerve cells of the brain and the distribution of cortical necrosis suggested asphyxia as the cause of the symptoms In the last five years, thirteen such instances have been studied In the nine cases terminating fatally, necropsies were performed and a microscopic study was made of the tissues of the nervous system The results of these clinical and pathologic studies form the basis of his study The immediate nervous manifestations usually consist of generalized convulsive seizures, muscular rigidity and persistent coma, at times terminating fatally with signs of 'decerebrate rigidity' Delayed symptoms may occur in the form of a psychosis, a parkinsonian symptom complex or disturbances of special sensation, particularly in the form of a partial or complete amaurosis The patient may recover entirely after an anovemic episode, may survive for a variable period with residual symptoms or may die within a few days In fatal cases, death usually occurs within from two to seven days but may occur only after an interval of weeks or months. Anoxemia following administration of nitrous oxide may be the result of impure gas, faulty apparatus or a preexisting or suddenly developed pulmonary lesion Regardless of the exact

source of the trouble, the clinical symptoms and the pathologic changes are the effect of asphyxia and are not due to any toxic effect of nitrous oxide itself. The mechanism in most instances seems to be one of two types (1) sudden circulatory and/or respiratory failure with consequent cerebral damage due to the immediate utilization of the remaining small amounts of available oxygen or (2) prolonged exposure of the brain to a dangerous degree of oxygen want. The resulting cortical lesion necessarily depends on the degree of anoxemia and its duration. Changes in the nerve cells may be described as sclerotic, acute degenerative and ischemic and, in chronic cases, "calcified" nerve cells. Lipoidal degeneration is also a common form of cellular change. The microglia develop into compound granular corpuscles in the presence of necrosis. The astrocytes adjacent to the necrotic areas undergo proliferation to aid in the formation of the astrovascular scar. The oligodendroglia undergo acute swelling and variable degrees of proliferation particularly in the subcortical white substance. The arachnoid and pia may show cellular proliferation, and adhesions between these two membranes may take place. The lenticular nucleus seems to be affected to about the same degree as the cerebral cortex, and essentially the same architectural and cellular changes are found. Small globules of calcium are commonly observed in the small blood vessels in this structure similar to those found in carbon monoxide poisoning. The Purkinje cells of the cerebellar cortex are quite markedly altered. Not all portions of the cortex are uniformly or symmetrically involved. The earliest lesions are found about the pericellular and pericapillary spaces, which would suggest that the injury is a result of 'tissue respiration'—a disturbed carbon dioxide-oxygen exchange between the tissue fluids and the cellular elements. A careful analysis of all possible factors should be made at the time an accident occurs under nitrous oxide anesthesia to determine, if possible, the cause of the trouble. A detailed study of the brain should be made in every fatal case. The ultimate changes taking place in the brain after a prolonged survival period are as yet unknown.

Michigan State M. Society Journal, Lansing

35 491 550 (Aug.) 1936

- Operative Treatment of Gastric and Duodenal Ulcer. Physiologic and Pathologic Principles Influencing Type of Procedure. W. Walters. Rochester, Minn.—p. 491.
- Tetany of the New Born. M. D. Jacoby. Detroit.—p. 496.
- The University and the State. J. D. Bruce. Ann Arbor.—p. 499.
- Unusual Ovarian Tumor. L. E. Hamlin. Norway.—p. 502.
- Relative Values of Symptoms of Appendicitis. C. R. Davis. Detroit.—p. 504.
- Gastro-Intestinal Syndrome in Coronary Disease. J. P. Bertucci. Islip, N. Y.—p. 506.
- Development of X-Ray Diagnosis of Gallbladder Disease. A. R. Bloom. Detroit.—p. 512.
- Adrenal Cortical Insufficiency. R. L. Schaefer and F. L. Strickroot. Detroit.—p. 516.
- Intra Ocular Foreign Body Problem. G. C. Kreutz. Detroit.—p. 521.

35 551 626 (Sept.) 1936

- Practical Considerations in Gynecologic Surgery. V. S. Counsellor. Rochester, Minn.—p. 551.
- Meningiomas of Posterior Fossa. Report of Four Cases. F. Schreiber. Detroit.—p. 557.
- Clinic on Tuberculosis of Uterus and Adnexa. R. S. Siddall. Detroit.—p. 561.

Gastro-Intestinal Syndrome in Coronary Disease—Bertucci points out that any physician of average knowledge is able to diagnose disease of the coronary arteries correctly when the symptoms are referable to the chest but that the question of coronary artery disease with symptoms simulating an acute abdominal condition is of greater importance and much more difficult to diagnose. This refers not only to the internist but more so to the surgeon who is called on in consultation and who must make a differential diagnosis between coronary disease and acute operable conditions. The author shows that coronary artery disease occurs more frequently in men past 40, especially in those leading a strenuous life which predisposes to early arterial degeneration. Previous history of periodic attacks of "indigestion," high blood pressure and dyspnea on exertion are significant factors in coronary disease. As a result of coronary occlusion the infarcted area in the heart may extend to the endocardium, resulting in a mural thrombus. This may result in embolism leading to various catastrophes. Coronary

arteries are not "end arteries," as anastomoses can be demonstrated. Pain is of an intense and persistent type and referred through the sympathetic system. Either coronary artery may be involved, but the anterior descending branch of the left is involved more often than the others. Onset of coronary artery disease may simulate any gastric disorder. The history, past and present, is of vast importance in evaluating the symptoms. The following points help in arriving at a correct diagnosis: dyspnea, rales in the bases of both lungs, fall in a previously elevated blood pressure, enlargement of the liver with tenderness, enlargement of the heart with weak and distant tones, irregularities and pericardial friction rubs. Fever and leukocytosis are usually present from twenty-four to forty-eight hours following the attack. The electrocardiographic tracing is of diagnostic importance in these cases. The author thinks that it should be used more often by physicians and surgeons alike. Coronary artery disease should be differentiated from cholelithiasis, cholecystitis, perforated peptic ulcers, gastric crisis of tabes dorsalis, subdiaphragmatic pleurisy, renal colic, tumors of the cord and herpes zoster.

Military Surgeon, Washington, D. C.

79: 85-168 (Aug.) 1936

- The Infantry and the Medical Department in War. E. Croft.—p. 85.
- Plastic Surgery in Relation to Armed Forces. Past, Present and Future. L. W. Johnson.—p. 90.
- Factors Determining Selection of Infra-Red Sources for Therapeutic Use. H. D. Rogers.—p. 102.
- Care of the War Disabled Prior to the World War. B. A. Movness.—p. 117.
- Simple Protractor for Use with Sanborn Metabolism Apparatus. A. N. Tasker and E. F. Curtis.—p. 127.
- Loss of Tactical Efficiency of Flying Personnel in Open Cockpit Aircraft Due to Cold Temperatures. H. G. Armstrong.—p. 133.
- Blood Stream Infection with *Fecalis Alkaligenes* and Marked Hepatitis. Case Treatment with Undenatured Bacterial Antigen. C. A. McIntyre.—p. 140.
- The Nosology of the Army Over a Hundred Years Ago. G. F. Lull.—p. 143.

Minnesota Medicine, St. Paul

19: 487 558 (Aug.) 1936

- The Doctor and Modern Economics. W. W. Will. Bertha.—p. 487.
- Studies in Water Balance. Dehydration and Administration of Parenteral Fluids. F. A. Collier. Ann Arbor, Mich.—p. 490.
- Cysticercosis of the Central Nervous System. A. B. Baker. Minneapolis.—p. 495.
- Causes, Diagnosis and Treatment of Hay Fever. C. O. Rosendahl and A. O. Dahl. Minneapolis.—p. 505.
- Results Obtained in Treatment of Hay Fever with Pollen Extracts. R. V. Ellis. Minneapolis.—p. 507.
- Multiple Sensitivity in Hay Fever. H. B. Sweetser, Jr. Minneapolis.—p. 510.
- Clinical Significance of Sedimentation Rate in Coronary Occlusion. M. H. Hoffmann. St. Paul.—p. 512.
- Nausea and Vomiting of Pregnancy. Fifty Cases Treated with Estrogenic Preparations. L. F. Hawkinson. Brainerd.—p. 519.
- The Child of Ancient Greece, with Especial Reference to the Pediatrics of Hippocrates. R. Rosenthal. St. Paul.—p. 524.

Missouri State Medical Assn. Journal, St. Louis

33: 339 370 (Sept.) 1936

- Rational Endocrine Therapy in Gynecology. R. J. Crossen. St. Louis.—p. 339.
- Loose Kidney Problem and the General Profession. B. Lewis. St. Louis.—p. 342.
- *Treatment of Varicose Veins with 2 per Cent Sodium Ricinoleate. F. M. Postlethwaite. Kansas City.—p. 346.
- Major Complications of Intravenous Therapy of Varicose Veins. J. G. Probst. St. Louis.—p. 349.
- Pneumococcal Peritonitis (Primary). H. A. Lowe, Springfield.—p. 353.
- Psychogenic Cardiovascular Disturbances. L. D. Cady. St. Louis.—p. 356.

Treatment of Varicose Veins with 2 per Cent Sodium Ricinoleate—It has been Postlethwaite's experience that in persons whose varicosities were resistant to other sclerosing agents or which recurred after the administration of other sclerosing agents an excellent end result was obtained after the use of sodium ricinoleate. He gives the histories of nine such cases and says that in another group of five patients with small areas of varicosity varying amounts of from 1 to 4 cc. of 2 per cent sodium ricinoleate was injected with excellent results. He found that the incidence of reactions and pain following the use of sodium ricinoleate was much lower than that following the use of other sclerosing solutions in this

culous lesion in the spine, the prognosis is good. Laminectomies in this series have not hastened recovery. Cases with paralysis show a higher mortality rate than those without paralysis. The best treatment for the paraplegia is that which is best for the tuberculous lesion itself. The patient is placed in a position which prevents weight bearing and at the same time gives the best immobilization to the spine. When the paralysis has disappeared, a spinal fusion should be done to cure the tuberculous bone lesion.

Sicklemia in the Southwest—For the basis of their study, Killingsworth and Wallace examined the wet blood smear preparations of 1,766 unselected patients in Texas during 1933 and 1934, 1,205 were Negroes, 322 white persons and 239 Mexicans. Because of various medical and surgical conditions, 949 Negro patients came to the hospital. The other 818 were healthy medical students, nurses or Negro and Mexican school children. None of the white patients examined showed sickling. None of the Mexican males showed sickling, but three, or 1.2 per cent, of the Mexican females had sickle cells in their wet smear preparations. Sixty-five of the 1,205 Negroes examined showed the trait of sickling in their blood. Five of these patients had active sickle cell anemia and sixty the sickling phenomenon only. Twenty-seven of the sixty Negroes were males. In the 450 healthy Negro school children examined, twenty-seven showed sickling. Thirty-eight of the 755 Negroes seeking medical or surgical care showed the trait. Two of these patients were found in the fifty cases with the clinical diagnosis of tuberculosis, twenty-one in the 347 patients with all stages of syphilis, five in the forty-one with infections of the upper part of the respiratory tract, one in the ninety-nine pregnant Negro females, and four in the cases with miscellaneous diagnoses. The ages of the patients showing the sickling phenomenon ranged from a new-born female infant to a Negro man aged 71. The average age of the Negro school children examined who showed sickling was 11 years. The average age of the adults showing the trait was 39 years. In a review of the past histories of the sicklemia cases, 50 per cent showed unusually severe childhood diseases, 70 per cent gave a history of frequent infections of the upper part of the respiratory tract and 20 per cent complained of general malaise and weakness without cause. On physical examination, cardiac enlargement and functional murmurs could be demonstrated in 20 per cent of the cases. It is probable that this was due to the concurrent disease at hand rather than to the sickling trait. 50 per cent had greenish yellow sclerae, 15 per cent had unexplained abdominal tenderness, and slight generalized nontender adenopathy was present in 10 per cent of the cases.

Western J Surg, Obst. & Gynecology, Portland, Ore

44 507-562 (Sept.) 1936

Interrelations of Pituitary and Thyroid. W. O. Thompson, Phebe Kirsten Thompson, S. G. Taylor III and Lois F. N. Dickie. Chicago.—p. 507.

*Thyroid Crisis: Its Relation to Liver Function and Adrenalin. W. G. Maddock, F. A. Collier and S. Pedersen. Ann Arbor, Mich.—p. 513.
Postoperative Hyperthyroid Reactions. J. deJ. Pemberton. Rochester, Minn.—p. 521.

Hyperthyroidism in Children. J. A. Lehman. Philadelphia.—p. 528.
Pronounced Weight Loss as Precipitating Factor in Thyrotoxicosis. S. Hertz and J. H. Means. Boston.—p. 534.

*Pyramidal Lobe of Thyroid and Its Significance in Hyperthyroidism. G. E. Beilby and J. C. McClintock. Albany, N. Y.—p. 538.
Control of Hypoparathyroidism. C. H. Arnold and Henry Blum. Lincoln, Neb.—p. 546.
Late Results of Total Thyroidectomies. A. E. Hertzler. Halstead, Kan.—p. 556.

Thyroid Crisis—Maddock and his associates consider the thyroid crisis one of the most disturbing conditions encountered in the care of patients with hyperthyroidism. In a review of 123 deaths from goiter from 1925 through 1933 at the University Hospital eighty-eight were found due to this cause. As one observes a typical thyroid crisis the impression is that the patient is being driven by a profound toxemia. The exact mechanism is not entirely clear but various conditions that bring on the reaction are known. Fright, anger, worry, the disturbing factors of an operation on any part of the body, an infection, fatiguing examinations and lack of sleep have all been shown to be precipitating elements. In the hope of furnishing more significant data on the exact mechanism,

studies of the liver function and of the epinephrine content of the blood were carried out on patients with hyperthyroidism. In many instances the blood bilirubin value was normal when abnormal amounts of the dye were retained, thus indicating the greater sensitivity of the latter as an index of liver function. Of the thirteen patients with toxic goiter, eight showed evidence of liver damage preoperatively. That there is a relationship between the severity of the disease and the liver damage was evidenced, first, by the preoperative observation of normal liver function in four nontoxic thyroid patients included as a control group, and, secondly, by the finding of an average basal metabolic rate of only plus 33 per cent for the five toxic thyroid subjects with normal liver function as against an average of plus 54 per cent for the eight hyperthyroid patients with liver damage. The effect of the operation on the liver in the hyperthyroid group was rather striking. On the first postoperative day their function, whether it had been normal before or not, was markedly impaired, the blood bilirubin being above normal and the dye retention being practically complete in the majority of cases. On succeeding days the liver function of the group improved, a variable time being necessary before it was back to the preoperative level. No true correlation was found between the liver function and the immediate postoperative course. No evidence was found of epinephrine in the peripheral venous blood of the majority of the patients who were responding nicely to the routine preoperative treatment. In patients whose progress was not satisfactory and in whom fever was present, the test occasionally showed the presence of a small amount of epinephrine. A few patients postoperatively showed a positive test, the highest values being obtained in the two patients of the group who developed severe thyroid crisis. The test has not been used for a long enough time to determine whether or not it is specific for epinephrine under conditions of disease. From the work of Goetsch, it is known that epinephrine can produce the restlessness, hyperthermia, tachycardia and other general characteristics of thyroid crisis. Besides these observations, acute pulmonary edema developed in these two cases. This feature of severe thyroid crisis can apparently be produced by epinephrine. In the past, this respiratory complication, in many cases the mucus and cyanosis being attributed to a bronchopneumonia or tracheitis, has been overlooked. One might ask whether epinephrine has anything to do with the liver damage observed in patients with hyperthyroidism. It has long been known that epinephrine disturbs the carbohydrate metabolism of the liver. Recently, a study has been made of the pathologic changes produced in the livers of dogs receiving epinephrine. With moderate doses well advanced fatty degenerations were found. This is essentially the major acute lesion observed by Weller and by Beaver and Pemberton in the liver of patients dying from hyperthyroidism.

Pyramidal Lobe of Thyroid in Hyperthyroidism—Contrary to the usual teaching, Beilby and McClintock have found that the pyramidal lobe of the thyroid can be demonstrated in 92.8 per cent of cases. The lobe varies in size from a few thyroid cells in a fibrous cord to a well developed process. The lobe possesses an adequate blood supply, quite independent of that to the main thyroid body. Postoperative hypertrophy of the pyramidal lobe is a frequent cause of recurrent symptoms in diffuse goiters. Careful inspection of the pyramidal lobe with such treatment as the surgeon deems adequate should be made a part of the surgical procedure in every operation for the relief of hyperthyroidism.

West Virginia Medical Journal, Charleston

32: 393-440 (Sept.) 1936

Oration on Medicine. Diagnostic Value of Intradermal Injections. F. C. Hodges. Huntington.—p. 393.

Attempted Means of Preventing Coronary Occlusions. W. C. Swann. Huntington.—p. 397.

Status of Allergic Nose in Sinusitis. Hay Fever and Asthma. J. H. McCready. Pittsburgh.—p. 404.

Diabetes Mellitus in Infancy. C. L. Holland and E. A. Holland. Fairmont.—p. 407.

Personal Observations on Paranasal Sinusitis. J. H. Moore. Huntington.—p. 410.

Some Thoughts Concerning Early Congestive Failure. R. H. Wharton. Parkersburg.—p. 415.

Rheumatic Fever and Rheumatic Heart Disease in West Virginia. W. C. Stewart. Charleston.—p. 420.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

11: 171-232 (Aug) 1936

- *Meningitis in the New Born W S Craig—p 171
Parental Loss and Child Guidance Muriel Barton Hall and F Hopkins—p 187
Staphylococcal Pneumonia Agnes R Macgregor—p 195
Ectopia Cordis cum Sterni Fissura C E Kellett—p 205
Carbohydrate Metabolism in Abdominal Tuberculosis C W Ross—p 215
Morquio's Disease Report of Two Cases Pearl Summerfeldt and A Brown—p 221

Meningitis in the New-Born—Craig gives an account of the clinical and pathologic features of twenty-one cases of neonatal meningitis. Observations were made and recorded in connection with twenty of these infants from the time of birth in the course of routine clinical duties. One child born at home, first came under observation after admission to the hospital on the third day of life. Postmortem examination was carried out in eighteen cases, in the other three cases permission for necropsy was not obtained, and diagnosis was based on the results of examination of cerebrospinal fluids obtained during life. The author shows that meningitis is usually part of a generalized septicemia but that it is not always possible to determine whether infection of the meninges has been by the blood stream or as the result of direct extension from other foci. The bacteriology of meningitis differs in the new-born from that found in older subjects. Neonatal meningitis is frequently the result of *Bacillus coli* infection, occasionally it results from infection by organisms of comparative rarity. In the twenty-one cases described, *Bacillus coli* was the causal organism in approximately half that number, in one infant meningitis resulted from septicemia due to an atypical organism of the *Salmonella* group. Morbid conditions of the skin subcutaneous tissues or surface mucous membranes were present in fifteen cases. Their presence, especially in premature infants, constitutes a definite risk of meningitis. Infection of the mouth and nasal passages is associated with special risks on account of the ease with which extension may occur along the eustachian tubes and give rise to otitis media and subsequent meningitis. Neonatal meningitis cannot always be diagnosed. The classic signs of meningitis are often absent. Importance is attached to prematurity and the presence of infection as predisposing factors. Signs of intracranial disturbance occurring after the first week of life should always suggest meningitis, of these, ocular signs, sponginess of the fontanel and mental restlessness are the most common. Fever of a few days duration usually precedes death. Convulsions are rare. The condition has to be differentiated from pneumonia in afebrile cases and from intraventricular hemorrhage in the presence of signs arising from increased intracranial pressure. Lumbar puncture is essential for a final diagnosis. Neonatal meningitis illustrates the seriousness of the threat to survival in infection of the new-born. The skin and surface mucous membranes are common portals of entry for infection. The danger of infection can be greatly lessened by meticulous attention to the hygiene of the skin, mouth, eyes, nasal passages and external auditory meatus. This care should commence with the birth of the infant.

British Journal of Ophthalmology, London

20: 449-496 (Aug) 1936

- Sclerosing Keratitis Profunda Case. A. Viswalingam—p 449
Granuloma of Bulbar Subconjunctival Tissue Arising from an Imbedded Cilium F W G Smith—p 455
Visit to an Ophthalmic Clinic in Vienna S M. Tyrrell—p 458
Correction of Ptosis by Two Strips of Fascia Lata. J. A. Magnus—p 460
Modification in Bifocals. F A Williamson Noble—p 464
Portable Scotometer J P S Walker—p 466

British Journal of Physical Medicine, London

11: 63-80 (Aug) 1936

- Physiotherapy in Functional Abdominal Disorders D Pennington—p 64
Labile Diathermy E. Taylor Pergelley—p 67
Inductothermy Its Physical Basis and Technique of Application H J Holmquest and F G Marshall—p 70

British Journal of Radiology, London

9: 487-558 (Aug) 1936

- System of Dosage for Cylindric Distributions of Radium. R. Paterson H M Parker and F W Spiers—p 487
Duodenal Ulcers Major and Minor Notes J R. Wylie—p 509
British Association of Radiologists Annual General Meeting Presidential Address R S Paterson—p 526
The Fellowship of the British Association of Radiologists Its History, Aims and Objects F Herniman Johnson—p 533
Construction of Radium Plaques with Description of New Calculating Appliance. H S Souttar—p 546

British Medical Journal, London

2: 321-374 (Aug 15) 1936

- Wasting in Infancy R C Jewesbury—p 321
Tuberculosis in Infancy and Childhood, with Especial Reference to Its Prevention J W S Blacklock—p 324
Ultrahigh Frequency P Bauwens—p 328
Simple Achlorhydric Anemia Plummer Vinson Syndrome and Carcinoma of Mouth Pharynx and Esophagus in Women Observations at Radiumhemmet Stockholm. H E Ahlborn—p 331
*Acute Infective Polyneuritis Report of Five Cases C Pinckney—p 333

Acute Infective Polyneuritis—According to Pinckney, acute infective polyneuritis is a comparatively rare disease, appearing at almost any time but mainly affecting men between the ages of 20 and 40. The disease has been shown by Wilson to be caused by a living virus, which was successfully transmitted from man to monkey and recovered in pure culture. The author points out that Collier describes the cases as falling into two types. The first is that of a four limb peripheral neuritis associated with an external ophthalmoplegia, the malady being apyrexial and painless with a rapid onset. The second group of cases show a slight pyrexia with a less rapid onset. They also show a four limb polyneuritis, but accompanied by a facial paralysis and often a slight general bulbar weakness. Here again the limb paralysis is in some patients the dominating part of the picture, while in others the facial paralysis predominates. A third group of cases, however, must be included which start as a lower limb polyneuritis, spreading rapidly upward to involve the trunk and finally the muscles of respiration. This group cannot be distinguished from what is known as Landry's paralysis, for there is little doubt that the two are due to a similar cause. In all these groups the paralyzed muscles are flaccid but do not show much wasting, and the reflexes are sometimes surprisingly obtained when voluntary power is almost absent. The paralysis also need not be truly peripheral and is often more proximal than distal. Sensory symptoms are usually present. The sphincters are hardly ever involved. Following a description of five cases, the author makes an attempt to fit these cases into the foregoing three clinical groups. He states that the prognosis must always remain somewhat uncertain, even later in the course of the disease, owing to the frequency with which exacerbations, with a further rapid increase of paralysis, may arise, but that recovery tends to be complete in the cases in which it occurs. The author has been tempted to give a prognosis based on the appearance and chemistry of the cerebrospinal fluid, a brown or yellowish tinged fluid with a high protein content, which points to a vigorous reaction appearing to justify a better prognosis than a clear fluid which shows slight or no alteration. There is no specific treatment but frequent lumbar punctures, especially when a high protein fluid is obtained, continued until that protein content falls, appears to hasten the rate of recovery.

Clinical Journal, London

65: 309-350 (Aug) 1936

- Hemorrhage in Early Pregnancy A M. Claye—p 309
Diagnosis of Some Febrile Conditions G L Gulland—p 314
*Biliary Infection J Phillips—p 321
*Psychoneuroses Seen in an Outpatient Department E. F. Skinner—p 325
Operative Surgery in Treatment of Tuberculosis T E Hammond—p 328
Injection Treatment of Varicose Veins I Fraser—p 331

Biliary Infection.—Phillips stresses that the essential cause of trouble in the biliary passages is microbic infection. Every symptom associated with stones in the gallbladder may occur with a gallbladder containing no stone. Provided no active infection is present gallstones may exist in the gallbladder or

the common duct without producing any symptoms of moment. Careful investigation will elicit symptoms indicative of biliary infection in many patients whose chief complaint is flatulence. Though in some cases infection within the gallbladder is slowly overcome, in most cases dyspepsia indicative of chronic infection persists for years. So long as infection is present there is a risk of some dangerous complication. Complications include (a) cholecystitis, which may go on to empyema of the gallbladder, (b) infection of the common duct (with or without stones) producing fever and jaundice, (c) infection of the hepatic ducts, which may be followed by general infective cholangitis, (d) pancreatitis—chronic, often associated with glycosuria, or acute, frequently fatal, (e) chronic toxic conditions, including disorders of the myocardium, muscles, fibrous tissues and joints. Removal of the gallbladder prior to the onset of complications is a relatively easy and safe operation and is generally followed by freedom from symptoms, which often leads the patient to express surprised delight because he had failed to appreciate how much discomfort he had previously had. There is therefore much evidence in favor of removal of any gallbladder that has been and is giving rise to a condition of biliary infection.

Indian Journal of Medical Research, Calcutta

24 1316 (July) 1936 Partial Index

- Nucleic Acid of Proteins of *Vibrio Cholerae* and Related Organisms B N Mitra—p 1
Statistical and Bacteriologic Analysis of Cholera Epidemic in Manipur State Assam C G Pandit E M Rice, W J L. Neal and N K Ghosh—p 37
Immunization Against Plague with Live Vaccine. L Otten—p 73
Sterilization of Drinking Water with Minimal Doses of Chlorine T N S Raghavachari and P V Seetharama Iyer—p 103
Comparative Study of Culture and Animal Inoculation as Methods for Isolating Tubercle Bacilli from Pathologic Materials A C Ukil and S R. Guha Thakurta—p 109
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Studies on Typhus in Simla Hills Part V Attempts to Establish Strains of Typhus from Human Sources G Covell—p 139
*Role of Malaria in Causation of Cirrhosis of Liver T S Tirumurti and M V Radhakrishna Rao—p 149
Carcinoma of Thymus A N Goyle A Vasudevan and K G Krishnaswamy—p 153
Basal Metabolism of Young Men at Hyderabad (Deccan) with Study of Their Physical Characters S A Rahman—p 173
Factors Affecting Carotene Content of Certain Vegetable Foodstuffs N K De—p 201
Pharmacologic Action of Camphor and Its Derivatives R N Chopra J S Chowhan and N De—p 249
Humoral Transmission of Effects of Cardiac Vagus and Sympathetic Stimulation by Drugs R K Pal—p 261
Study on Activation of Tissue Growth (in Vitro) with Cobra Venom R N Chopra N N Das and S N Mukherjee—p 267
Action of Rattlesnake and Moccasin Venoms as Compared with Indian Viper Venoms J Taylor and S M K Mallick—p 273

Role of Malaria in Cirrhosis of Liver—Tirumurti and Radhakrishna Rao direct attention to the fact that in a previous communication they pointed out that the common association of malaria and cirrhosis of the liver in India has given rise to divergence of opinion regarding the role of the former in the causation of the latter. They reinvestigated the whole question by improved staining methods. As a correct understanding of the problem under discussion depends on an accurate study of the nature and genesis of fibrosis, if any, in chronic malarial livers, they bestowed their attention on this line of investigation. From each of the specimens of chronic malarial livers, several thin pieces were taken so as to include in the parenchyma the different orders of the divisions of the portal and hepatic venous trees to study the changes, if any, at the different levels of the vascular and biliary trees. The pieces of the liver were fixed in 10 per cent neutral solution of formaldehyde. In the case of old museum specimens the pieces were first washed in running tap water in a histologic washing tank for twenty-four to forty-eight hours and then fixed in 10 per cent neutral solution of formaldehyde. For routine examination, paraffin sections were stained with Ehrlich's acid hematoxylin and eosin for staining the connective tissue the paraffin sections were stained with Weigert's iron hematoxylin and van Gieson stain. Frozen sections were stained with the Foot and Menard silver carbonate impregnation method to bring out the reticulum of the liver. The important histopathologic features in the liver in this series are absence of any loss of lobular pattern, loading

of Kupffer cells with malarial pigment, and no noticeable increase of fibrous tissue in the liver. In none of the cases investigated was there any pseudolobulation or fibrosis similar to that seen in a typical case of cirrhosis of the liver. The indiscriminate use of the term "cirrhosis" for any and every type of fibrosis of the liver has no doubt added to the confusion regarding the role of malaria in cirrhosis of the liver. As pointed out by Rolleston and McNee, the possibility of slight necrosis of the hepatic parenchyma in acute or subacute malaria cannot be denied, but the liver possesses a remarkable capacity to regenerate so that such necrotic changes leave no permanent trace behind. In almost all the instances in this series, the chronic malarial liver showed no increase of fibrous tissue. The causes of cirrhosis of the liver are so many that each case should be thoroughly studied in order to arrive at the etiologic agent responsible for the disease. One of the authors (Radhakrishna Rao, 1933) showed from an intensive investigation of cases of cirrhosis of the liver that malaria "cannot be considered to be a causal factor in the production of cirrhosis of the liver, though it may be an important predisposing cause." It is important to remember that malaria and cirrhosis of the liver may coexist in a patient without the former exerting any influence on the latter condition. Finally, it may be said that the evidence presented in this paper proves that malaria as such is not a direct cause of cirrhosis of the liver.

Irish Journal of Medical Science, Dublin

No 128 337 564 (Aug) 1936

- Report of the Rotunda Hospital A H Davidson E B Solomons R C Sutton A H Thompson G Dockery and W R F Collis—p 337
Clinical Report of the Coombe Lying In Hospital 1935 T M Healy H V Tighe and J J Finegan—p 428
Clinical Report of the National Maternity Hospital J F Cunningham R White and P J McMahon—p 488
Review of Methods at Present Used in Treatment of Placenta Praevia O Browne—p 540
Vaginal Discharges E Solomons and G C Dockery—p 548

Journal of Laryngology and Otology, London

51 499 562 (Aug) 1936

- Value of Bronchoscopy as an Aid in Diagnosis and Treatment of Bronchial Carcinoma D H Ballon and H C Ballon—p 499
Bronchoscopy in Hemoptysis P G Gerlings—p 508
Treatment of Paroxysmal Sneezing F Coke—p 522

Journal Obst. & Gynaec. of Brit. Empire, Manchester

43: 609 820 (Aug) 1936

- Results of Conservative Treatment of Ovaries J Hendry—p 609
*Conservative Treatment of Pathologic Conditions of Fallopian Tube B Solomons—p 619
Results of Conservative Treatment of Uterus A L Robinson—p 634
Radiumhemmet Method of Treatment and Results in Cancer of Corpus of Uterus J Heyman—p 655
Reconstructive Pelvic Surgery for Genital Prolapse Evaluation of Principles G G Ward—p 667
Prevention of Puerperal Sepsis L Colebrook—p 691
Abdominal Myomectomy A A Gemmell—p 715
Uterine Carcinoma Following Radiotherapy for Benign Lesions G I Strachan—p 749
Primary Malignant Diseases of Vulva with Especial Reference to Treatment by Operation W Blair Bell and M M Datnow—p 755

Treatment of Pathologic Conditions of Fallopian Tube—Solomons remarks that palliative treatment is the method of choice in acute salpingitis. He shows that the tube appears larger when dilated by some kind of iodized oil. It leaves the uterus straight as a rule. Anesthesia interferes with peristalsis of the tube. Reference is made to work showing a definite relation between rhythmic contraction of the fallopian tube and the menstrual cycle. This may account for the cure of sterility in some cases by the injection of large doses of endocrine preparations. Kaufmann points out that the fimbriated end of the fallopian tube remains passive during the passage of the ovum. This seems to account for cures of sterility even after the removal of the fimbriated ends of the fallopian tubes. Iodized poppy-seed oil is not altogether safe. When operative treatment is considered the whole situation must be placed before the husband and wife. It must be pointed out that the chances of success except at the fimbriated ends, are extremely small. In view of even the small number of successes a further effort must be made to attain a better technic. Before operation is attempted the husband must be tested and the woman must

be in a fit condition. The results of a questionnaire are given. Some of the best known gynecologists in the world give their opinion as to whether or not to operate. Some never operate on the fallopian tubes, some operate only on the fimbriated ends, others operate on all portions of the tube. The average percentage of successes after operation is about 10.

Journal of Tropical Medicine and Hygiene, London

39: 185-196 (Aug 15) 1936

Treatment of Schistosomiasis B S Bindra—p 185
Experimental Conjunctivitis Caused by Virus of Lymphogranuloma
Inguinale E von Haam and R Hartwell—p 190

Lancet, London

2: 297-354 (Aug 8) 1936

Glycogen and Metabolism of Carbohydrate F G Young—p 297
Operative Treatment of Severe Gastric Hemorrhage of Ulcer Origin
A Reply to Critics H Finsterer—p 303
Location of Cerebral Tumors by Electro-Encephalography W G
Walter—p 305
Decreased Gonadotropic Hormone Production During Pregnancy Asso-
ciated with Increased Intracranial Pressure W R Henderson and
J M Robson—p 308
Allergic Reactions to Schick Test H J Parish—p 310

Decreased Production of Gonadotropic Substance During Pregnancy—Henderson and Robson show that the pituitary is essential for the maintenance of ovarian function, for ovulation and for the implantation of the fertilized ovum in all species that have been investigated. The relationship of the further course of pregnancy to the pituitary activity, however, varies in different animals. In some species, removal of the pituitary after certain stages of pregnancy does not interfere in any way with the subsequent course of gestation. In others, its continued activity is essential throughout the duration of the pregnancy. In the human subject there is no evidence as to whether the pituitary is essential for the maintenance of pregnancy or not. The present case is of interest in that symptoms and signs of intracranial pressure were present which, in the absence of pregnancy, would have been associated with marked interference with the menstrual function because of a decrease in the pituitary secretion. The more acute symptoms appeared about the time of conception and yet gestation continued until artificially terminated at the sixth month. The case described is of interest chiefly because it has afforded an opportunity of investigating the production of gonadotropic substance under the exceptional circumstances of pituitary hypofunction during gestation and of comparing this production with that occurring during normal pregnancy. The examination of three separate specimens of urine consistently showed a low content of gonadotropic substance. The occurrence of a weakly positive Aschheim Zondek reaction also supports the conclusion that urinary gonadotropic excretion was below normal. The results of the placental examination are in keeping with those obtained on the urine. On the basis of this case it appears possible that the pituitary is not an essential factor in the maintenance of pregnancy, and that in this respect the human subject resembles such animals as the rat, the mouse and the guinea-pig, in which removal of the pituitary during the later stages of gestation does not necessarily lead to its premature termination. On the other hand, the evidence of decreased production of gonadotropic substance, derived from the quantitative estimation of the urine and placenta, does suggest that the pituitary is at least partly responsible for the enormously increased production of gonadotropic substance during pregnancy.

2: 355-412 (Aug 15) 1936

Schorrhea J Kinnear—p 355
Allergic Basis of Primary Purpura in Children C H D Bartley and
A D C Bell—p 359
Recoil Following Free Drainage in Acute Intestinal Obstruction and
Other Analogous Conditions W I de C Wheeler—p 361
Sub-cure State in Relation to Gastric and Duodenal Ulcer H E
Archer and G Graham—p 364
Scurvy as Result of Dietetic Treatment R Platt—p 366
Asthma Immunologic Mechanism Diagnosis and Treatment with
E fetal Reference to Vaccine Therapy D Harley—p 367

Scurvy as Result of Dietetic Treatment—During the last six years Platt has observed four cases of scurvy. The first case concerned a neurotic woman who had "dieted" herself and the other three cases concerned patients with peptic

ulcer who had received dietetic treatment. As all showed typical manifestations of developed scurvy, there was no reasonable doubt of the diagnosis. Further confirmation was afforded by the dietary history and (in three cases) the response to treatment, which consisted in the administration of vitamin C by mouth and by injection. After giving the histories of the four cases, the author says that the object of this report was to point out the dangers of prolonged treatment with diets lacking in vitamin C and also to call attention to the possibility of scurvy developing on such diets. The correct diagnosis had not been made in any of these cases by the doctor in attendance simply because it had not been considered, scurvy being nowadays such a rare condition.

Asthma—Harley shows that the evolution of the asthmatic state can be divided into three parts. 1 The predisposition of the individual to become hypersensitive, which is commonly inherited but may be acquired. 2 The development of hypersensitivity to one or more foreign substances, the contact with which results in reactions characteristic of the hypersensitive state. 3 The secondary nonspecific factors, which include nearly all possible forms of minor trauma (toxic and psychic, direct and reflex, and dietetic indiscretions). It has been suggested that they act by lowering the "tolerance" of the asthmatic patient to the primary specific exciting causes, so enabling the latter to provoke an attack in even more minute amounts than usually required. One is impressed by the large number of asthmatic persons presenting themselves for treatment in whom the asthma first appeared after or is associated with some infective process, often comparatively mild infections of the respiratory tract. Many of these cases give negative or only very feeble skin reactions to inhalant and ingestant idiotoxins, but bacteriologic examination almost always reveals marked qualitative or quantitative abnormalities. The excellent results of vaccine therapy in these cases support the hypothesis that the relationship between the bacteria and the asthma is one of cause and effect. Bacterial vaccine skin tests in the diagnosis and treatment of bacterial sensitization asthma have been widely used in recent years. The usual method is to prepare vaccines of the bacteria of the sputum and test the patient's skin reactions to them. Those which produce reactions are employed for therapeutic purposes. Unfortunately these vaccine skin tests have proved unsatisfactory, as it has been found that nonasthmatic individuals often give similar reactions to the vaccines and also that the vaccines of the normal intestinal gram-negative bacilli often cause bigger reactions in the skin of the asthmatic than do the infecting organisms from the sputum. Clinically, the two main types of asthma may occur separately or together, with varying predominance of one or the other. In discussing the treatment the author gives his attention to that therapeutic procedure which attacks the underlying cause from the immunologic standpoint. The success of this type of therapy depends on the accurate diagnosis of the type of immunologic mechanism involved in the individual case. He emphasizes that the tendency of the "advanced allergist" to consider all asthmatic patients in terms of skin reactions to nonbacterial substances, and to institute treatment accordingly, produces brilliant cures in certain cases but leads to disappointing results when the primary cause is bacterial. He feels that this is due partly to the use of the intradermal method of skin testing, which frequently produces "false positive" reactions in the absence of the corresponding clinical sensitivities, and to the failure to make a routine bacteriologic examination of all patients in whom the skin reactions are multiple and indistinct.

Medical Journal of Australia, Sydney

2: 103-138 (July 25) 1936

An Address D R W Cowan—p 103
Some Modern Ideas in Heart Disease Notes R Whishaw—p 108
Bronchiectasis M J Plomley—p 116
Otorhinolaryngologic Considerations in Bronchiectasis A B A. Watkins—p 118

South African Medical Journal, Cape Town

10: 491-522 (July 25) 1936

A Practitioner's Thoughts on Progress W H Croudace—p 493
Accidents in Artificial Pneumothorax Treatment J F Wicht—p 505
A Route on Which Quartan Malaria Was Contracted W Campbell and
E C Greenfield—p 506

Gynécologie, Paris

35 385-448 (July) 1936

Cesarean Section and Subsequent Labors R. Keller and H. Fobe—p 385

*Exchanges in Course of Gynecologic and Obstetric Operations in Different Narcoses and Their Practical Value in Treatment M. G. Serdukoff and Koroleva—p 399

Narcosis and Gynecologic and Obstetric Operations—Serdukoff and Koroleva say that the aim of every surgeon is to obtain a normal postoperative period and a prompt cure. It is important also to know the postoperative chemical changes in the patient. For this purpose the blood serves as the most perfect mirror of biologic changes. As a result of their studies on the blood following certain narcotics, they came to the conclusion that the chemistry of the blood influences the narcosis and other complications and plays an important part in the preoperative preparation of the patient. The most important single feature of their observations was the postoperative hyperglycemia, which reaches its maximum on the first or, occasionally, the second day after the operation. In the majority of cases the quantity of blood sugar returns to normal between the sixth and seventh days. The disturbance of alkali reserve is also an important element. In the majority of cases the alkali reserve diminishes in the blood and there is an increase of ketone bodies. Of sixty-six cases the alkali reserve was reduced in fifty-four and to a serious extent in one. The changes in blood nitrogen were studied in sixty-eight cases. Increase in nitrogen was observed in 60 per cent (thirty-eight cases). This was more marked in the cases in which operation was performed for cancer of the uterus. Attention was also directed toward the potassium calcium coefficient during the postoperative period. In the majority of instances the coefficient was lower and reached its minimum about the fifth or sixth postoperative day. During ether narcosis the blood chlorides increased within thirty to sixty minutes of the beginning of ether administration. The authors concluded from these studies that it is important to prepare patients carefully for an operation with these changes in mind. Furthermore, it is well to observe the changes in the blood chemistry and to make corrections for the oscillations in chemical values as far as possible.

Revue Française de Pédiatrie, Paris

12 453-588 (No 4) 1936

Taste and Odor of the New Born. F. Stirnimann—p 453

Statistical Studies of Skin Reactions to Crude Tuberculin in Subjects Aged from 2 to 17 Years in Region of Paris M. Coffin—p 486

Secondary or Symptomatic Erythroblastoses (Normoblastoses) N. J. Spyropoulos—p 504

*Dysentery in Children and Its Treatment. P. G. Eivine and G. I. Vechslor—p 512

Limits of Diagnostic Errors in Diseases of Children M. Michalowicz—p 527

Treatment of Dysentery in Children.—Eivine and Vechslor report studies on 195 children observed by them during the years 1934 and 1935. Twenty-six of the children were less than 1 year of age, twenty-seven 2 years, forty-nine 6 years, forty-nine 10 years, and forty-four less than 10 years. One hundred and nineteen were boys and seventy-six were girls. Some of these children with dysentery were submitted to thoroughgoing bacteriologic examinations. Shiga's bacillus was found in the majority of positive cases and the Flexner bacillus in one. In most of the children, however, the bacteriologic observations were negative. Of the 195 children, forty-nine died, which gave a mortality rate of 25 per cent. The most serious prognosis is in nurslings and infants as well as in children having prolonged attacks. Treatment may be divided into three principal forms: specific, symptomatic and dietetic. The specific treatment consists in the use of the bacteriophage and antidyenteric serum. In nurslings and small infants there is often no relationship between the slight local symptoms and the severe toxic general state. Dysentery frequently has the aspect of an alimentary intoxication in nurslings. One of the indexes of gravity in older children is the quantity and quality of the stools. Vomiting in the course of dysentery in older children is always a sign of bad prognosis. In severe dysentery other complications such as infectious encephalitis may be encountered. In treatment, antidyenteric serum is effective.

Prolonged starvation is bad for the children and tends to prolong the course of the disease, predispose toward edema and increase the mortality rate. The dietetic regimen has a better effect in the treatment and should be composed of foods of sufficient caloric content but absolutely fresh, well prepared and well cooked. Treatment by medicines in dysentery in children has no particular importance.

Annali di Ostetricia e Ginecologia, Milan

58: 1019-1162 (Aug 31) 1936

Graphic History of Cesarean Section P. Gall—p 1019

Quotient of Disposability and Glycolysis in Alimentary Lipemia in Pregnancy F. Guercio and R. Indovina—p 1059

*Relation Between Gonorrhea and Functions of Motherhood. D. Mancini—p 1067

Genitoparietal Fistula Cases E. Bortini—p 1123

Cancer of Neck of Uterus in Pregnancy Treatment. M. Fagnoli—p 1135

Gonorrhea and the Functions of Motherhood.—Mancini points out the importance of the relation existing between gonorrhea and the functions of motherhood. He believes that pregnancy stimulates gonorrhea by which several pathologic processes, such as granular vaginitis, Bartholin's, condylomas and rheumatism, complicate pregnancy. The most frequent gonorrheal complications in pregnancy are abortion and the localization of gonorrhea in the joints. Gonorrheal cervicitis can be the cause of abortion by premature rupture of the membranes. The evolution of labor in women suffering from gonorrhea and the operations that have to be performed in these groups of patients are the same as those observed and performed in normal women. Fever is not a frequent puerperal complication. When it appears regularly it is the result of propagation of the gonorrheal process to more internal genital organs rather than of the action of other bacteria complicating gonorrhea. The propagation of gonorrhea during the puerperium is grave from the functional point of view. Periovarian-salpingeal localization of gonorrhea is the most typical and grave late complication of the puerperium and it is the most frequent cause of secondary sterility. The weight of babies born to women suffering from genital gonorrhea is the same as that of babies born to normal women. If mothers are suffering from gonorrhea of extra-genital location, however, the weight of their babies is greatly diminished in comparison to that of babies born to normal women. The most frequent and dreadful action of gonorrhea on the babies is the development in the latter of gonorrheal conjunctivitis, a condition that demands immediate therapeutic attention.

Minerva Medica, Turin

2: 217-240 (Sept 8) 1936

Angina Pectoris and Grave Anemia. Clinical and Electrocardiographic Study of Cases. F. De Matteis—p 217

*Percutaneous Administration of Insulin G. F. Capuani—p 224

Still's Disease Case A. Veritti—p 229

Percutaneous Administration of Insulin.—Capuani reports a method for administering insulin through the skin. It consists of injections with 100 units of insulin in powder dissolved in 1 cc of water and incorporated in 9 Gm of pure wool fat. The mixture is placed in small tin tubes and labeled. To be used for rubbing in the proportion of 0.5 Gm of the salve (which corresponds to 20 units of insulin) for each rubbing. The back of the hand and the anterior aspect of the forearm are the regions at which the salve is gently rubbed in for three minutes. The palm of the hand should not be used, as it does not absorb the salve. The author verified the action of insulin in eighteen normal persons and in eight suffering from diabetes. He found that the clinical results of a dose of insulin given by this method are the same as when the same amount is hypodermically injected. The advantages of insulin through the skin are the simplicity of the administration, which can be done by the patient and the moderate expense of the treatment. It is advisable to use freshly prepared salve. The administration of insulin through the skin will be indicated for treating timid persons and children as well as for workers who have not the time to attend the physician's office. The hypodermic route, however, retains its place and importance for administration of insulin by physicians.

Tumori, Milan

10: 327-449 (July Oct.) 1936 Partial Index

- Dialysis of Perfusion Liquid of Chicken Sarcoma F Pentumalli—p 377
Is Admission of Theory of Preblastoma and Precancer Stages Justified? L. Aschoff—p 337
Biology of Neoplastic Tissues H Druckrey—p 345
Pachydermia of Larynx with Tumoral Development Case G Cardì—p 363
*Differentiation of Blood Serum in Pregnancy and in Cancer U Borghetti and P Natale—p 406
Absolute Interferometric Index of Blood Serum in Cancer and Diseases Other Than Cancer E Tantini—p 413

Differentiation of Blood Serum in Pregnancy and in Cancer—Borghetti and Natale state that the Weltmann serum coagulation reaction enables one to differentiate the blood serum of pregnant women from that of patients suffering from cancer. The electrolytic threshold of normal blood serum to calcium chloride in Weltmann's reaction is 0.47. It is greatly diminished in the blood of patients suffering from cancer (0.23), whereas it is almost normal in pregnancy and puerperium (0.42 and 0.46, respectively). Moreover, there is a widening of the coagulation band, that is, deviation to the right in cancer and a band of coagulation almost normal with slight deviation to the right in pregnancy. According to the authors the test proves that the physicochemical structure of the blood serum is different in pregnancy from that in cancer. The results of the test indicate colloidal lability of the blood serum in pregnancy as well as in cancer, but the behavior of the electrolytic threshold and the different intensity of flocculation seem to indicate that the type of colloidal lability in pregnancy is different from that in cancer, that is a physiologic transient lability and a pathologic permanent lability, respectively.

Absolute Interferometric Index in Cancer—According to Tantini, the absolute interferometric index indicates the total amount of certain substances, especially proteins, in the blood serum. It is the result of a comparison between the figures of the interferometric index of a given blood serum and the distilled water (which is zero). The absolute interferometric index for groups is the average figure resulting from the figures of the individual values in the blood serum of several persons grouped according to their condition, normal or pathologic. The author made determinations of the absolute interferometric index in the blood serum of 126 persons including seventy-nine patients suffering from cancer. He found that the interferometric index is diminished, in comparison to the normal one, in pregnancy, in cancer of the digestive and genital organs and in fibroma of the uterus. The variations of the interferometric index have no diagnostic value. They indicate, however the existence of organic alterations caused by cancer and other tumors, such as cachexia, hydermia and exaggerated disintegration of the proteins, as well as by certain physiologic conditions such as hydermia in pregnancy. The absolute interferometric index is greatly diminished in the blood serum of patients suffering from cancer and treated by radium.

Semana Médica, Buenos Aires

43: 621-688 (Sept 3) 1936 Partial Index

- Ostitis Deformans Case F C. Arrillaga A V Solari and J C Lascano Gonzalez—p 621
Surgery of Parathyroid J Arce and A A Introzzi—p 639
Echinococcus of Spleen Ivanisovich's Classification R C Ferraro—p 648
Transfusion of Preserved Blood E Sammartino—p 652
Primary Syphilitic Infection and Some Causes of Diagnostic Errors D Calzetta H Pisetta and A Diaz Colodrero—p 680

Transfusion of Preserved Blood—Sammartino reviews the results of transfusion with preserved blood and concludes that blood preserved in vials at a temperature of 1 or 2 C has not the same biologic properties as fresh blood. In making a transfusion it is advisable to use the blood most recently preserved, because the effects of transfusion largely depend on the relative freshness of the blood. The use of preserved blood is indicated in acute anemia due to grave hemorrhages for the poor who are unable to pay professional donors in preoperative and postoperative periods acute conditions trauma cancer and toxic conditions and also in preparing injections or transfusions with the plasma or the erythrocytes separately. The use of fresh blood is indicated in anemia leukemia and

organic debility of long duration. Transfusion of preserved blood gives satisfactory clinical and hematologic results without complications. All hospitals and posts for surgical and traumatologic work should have an abundant supply of preserved blood in refrigeration as one of the indispensable surgical resources. Preserved blood will be one of the most necessary therapeutic resources in future wars, to be used in cases of hemorrhage, grave trauma and toxic conditions. Preserved blood from cadavers is indicated when it cannot be obtained from living persons in cases of grave anemia due to hemorrhages, for the poor and for transfusion during war.

43 689-756 (Sept. 10) 1936 Partial Index

- Unilateral Exophthalmos in Hyperthyroidism Without Goiter Cases Paulina Satanowsky—p 689
*Sign of Pleural Irritation in Etiologic Diagnosis of Acute Rheumatic Fever J C González Podesta and C Arias—p 714
*Prognostic Value of New Sign in Typhoid and Pneumonia R Chaminaud—p 716
Traumatic Rupture of Rectus Abdominis with Integrity of Skin Case F Pablo Giordano—p 717
Idiopathic Hydrocele of Tunica Vaginalis in Children Treatment A Lagos García and M L Olascoaga—p 743
Spinal Anesthesia in Labor V Marino Donato—p 747

Pleural Irritation in Acute Rheumatic Fever—The sign described by Gonzalez Podesta and Arias for the etiologic diagnosis of acute rheumatic fever consists in the presence of fine or average pleural rales at the base or at the fissures of the lung and rarely at the apex. The rales are the same during expiration and inspiration, independent of other percussion and auscultation phenomena, not modified by coughing, unrelated to the intensity of respiration and indicate irritation of the pleural serosa. In rare cases the focal place of origin of the rale is painful on external pressure or during deep inspiration. Pleural rales appear in 60 per cent of the cases of acute rheumatic fever before or simultaneously with the articular symptoms and, in all cases, before development of endocarditis. The sign is lacking in all cases of acute and subacute polyarthritis of nonrheumatic etiology and is of value in the differential etiologic diagnosis of rheumatic and nonrheumatic polyarthritis.

Prognostic Sign in Typhoid and Pneumonia—Chaminaud gives the paternity of the sign he describes to Brunati. The sign consists in the appearance of corneal opacities, which in the course of typhoid or pneumonia, indicate that death will take place within a few hours. The appearance of corneal opacities in several other diseases has no prognostic value especially in measles and smallpox, in which it is a common occurrence. The sign was verified in two cases of typhoid by Brunati and in a case of pneumonia by Chaminaud.

Beitrage zur klinischen Chirurgie, Berlin

164 1176 (July 29) 1936 Partial Index

- Experiences with Surgical Treatment of Tuberculous Spondylitis According to Albee Modified According to Jacobovici I Grigorescu and A Vasiliu—p 1
*Attempt at Transfusion of Conserved Defibrinated Blood A Filatov—p 9
Traumatic Detachment of Upper Femoral Epiphysis a Typical Birth Injury R Pfeiffer—p 18
Significance of Tetanus Antitoxin in Prophylaxis and Treatment of Tetanus M Kaspar—p 31
Mediastinography and Artificial Fixation of Anterior Mediastinum H G Heinersdorff—p 61
Thyroid Activity and Healing of Wounds H Eitel and O E Riecker—p 69

Transfusion of Conserved Defibrinated Blood—Until recently, Filatov says, the transfusion of defibrinated blood was considered inadmissible. However, defibrinated blood is not toxic, provided certain precautions are observed in the preparation and storage. The defibrination should be done in a paraffinized container. Following withdrawal of the blood it is stirred for from five to six minutes with a twisted glass rod during which time the rod becomes gradually covered with a thick layer of fibrin. With this type of defibrination, the blood loses approximately 10 per cent of its weight. Following defibrination the blood is stored in sterile bottles in the icebox at from 6 to 8 C. The author used the defibrinated blood in fifty-three cases. The time of conservation varied between one hour and fifteen days. In the majority of cases,

blood was used that had been conserved for two or three days. It was found it is inadvisable to use blood that has been kept more than twelve days, because after this term a partial hemolysis takes place. The quantities of defibrinated blood that were used for transfusion varied between 100 and 300 cc. In ten cases of profuse hemorrhage the defibrinated blood was transfused for the purpose of hemostasis and always had the desired effect. The defibrinated blood was used also in sixteen cases of hemorrhage and shock. As regards its substitutional qualities, defibrinated blood is only slightly inferior to fresh citrated blood. The remaining twenty-seven cases in which the citrated blood was used concerned infectious processes, burns and so on. The author emphasizes that, on the whole, the transfusion of defibrinated blood has the same effect as the transfusion of citrated blood. Serious complications or a fatality were never observed. Reactions in the form of a slight increase in temperature, general discomfort and occasionally chills occurred in ten (18 per cent) of the author's cases. He concludes that defibrinated blood is entirely suitable for transfusion.

Klinische Wochenschrift, Berlin

15 993 1024 (July 11) 1936 Partial Index

- Respiration of Human Bone Marrow A Schretzenmayr and H Brocheler—p 998
- Ovarian Hormone and Thyroid Function E de Amilibia M M Mendizabal and J Botella Llusá—p 1001
- *Peroneal Phenomenon as Precursor of Postdiphtheric Abolition of Patellar Tendon Reflexes Gertrud Zimmermann—p 1004
- Behavior of Antithyroid Protective Substances of Blood of Healthy Persons under Influence of Diiodotyrosine F Bodart and K Fellinger—p 1005
- *Little Known Pupillary Phenomenon During Drop Anesthesia A Heinrich—p 1010
- New Method for Determination of Iodine in Blood H Doering—p 1010

Peroneal Phenomenon in Postdiphtheric Abolition of Patellar Reflexes.—In two cases of malignant pharyngeal diphtheria with subsequent development of paralytic symptoms, Zimmermann observed, before the abolition of the patellar tendon reflexes and practically as a precursor of this symptom, a hyperirritability of the peroneal nerves. After describing the history of these cases, she points out that in both cases comparatively large doses of strychnine (4 mg daily) were administered in addition to the diphtheria serum. However, she does not think that the increased irritability of the peroneal nerves is caused by these large doses of strychnine, for she administered the same doses in other cases of diphtheria and of scarlet fever and, although she watched for the peroneal phenomenon she did not detect it. She suggests that perhaps an increased sensitivity to toxin or other causes might play a part. Whether it was an accident that the peroneal phenomenon, which otherwise is known only in spasmodophilia, was present in those cases in which the patellar reflexes were later abolished, or whether this is an early symptom of postdiphtheric pseudotabes will require further investigations on a larger material.

Pupillary Phenomenon During Drop Anesthesia.—Heinrich points out that, if during drop anesthesia particularly with ether the pupillary reflexes are carefully watched, it can be observed that, beginning with a certain degree of narcosis, the pupils cease to respond to light. The anesthetist at the author's hospital detected that there is a degree of anesthesia during which there exists a reflex pupillary paralysis, if only one eye is opened whereas the opening of both lids still results in bilateral light reflex. The pupils fail to react to bilateral light stimulus only after the anesthesia has been made deeper. The author says that the sphere in which the pupillary reaction is still present to bilateral light stimulus, while a unilateral stimulus reveals a paralysis of the reflex is not wide. The phenomenon appears approximately at the beginning of the stage of tolerance and is found in the passage from slight to deep as well as from deep to slight anesthesia. The author maintains that this depth of anesthesia is adequate for all laparotomies and that it has to be deepened only in exceptional cases. It reduces the consumption of ether and also the danger of postoperative pneumonia. The practical utilization of the phenomenon is slightly reduced by the fact that the preliminary injection of morphine atropine prevents its appearance in some persons. However it often develops in spite of these injections.

Medizinische Klinik, Berlin

32 953 992 (July 17) 1936 Partial Index

- Overlooked Cases of Poliomyelitis K Bingold—p 953
- Tuberculosis Immunity F Hamburger—p 955
- Exudative Serous Tuberculous Pleurisy H Koch—p 959
- *Some Peculiarities of Diabetes Mellitus During Childhood Insular Infantilism Alveolar Pyorrhea Local Lipomatosis and General Adiposity R Priesel—p 962
- *Prophylactic Ultraviolet Irradiation in Pulmonary Tuberculosis of Late Childhood L Schall—p 971
- Question of Transmission of Congenital Syphilis to Next Generation. F Wendel—p 976

Diabetes Mellitus During Childhood.—According to Priesel, children with diabetes mellitus who always receive the proper amount of insulin and a diet that is calorically adequate to the age of the child usually develop normally. However, if a diabetic child fails to receive for long periods adequate amounts of insulin in order to utilize the quantity of food that corresponds to the age of the child, a condition may develop which is designated "insular infantilism." The linear growth ceases and the puberal development fails to take place. The author cites cases and thinks they will now be more frequent because, before the insulin era, the diabetic children as a rule died within two years after the manifestation of the diabetes. In one of the cases of insular infantilism, he observed an especially severe form of alveolar pyorrhea which had resulted in loosening of all the teeth and the falling out of some. Roentgenoscopy revealed atrophy of the alveolar process. The examination of sixty-two diabetic children revealed that eighteen had signs of alveolar pyorrhea. The author directs attention to local lipomatosis and local lipodystrophy, which occasionally develop at the sites of insulin injection. He thinks that a certain predisposition plays a part in these conditions, since they do not develop in all cases. He states that recently he observed a considerable number of diabetic children, girls exclusively, who immediately after the completion of puberal development developed generalized adiposity. It is extremely difficult to influence this form of obesity for it develops even in those girls who do not exceed their prescribed diet. The author considers it possible that a fat retaining action of insulin might play a part in the development of this type of obesity.

Prophylactic Ultraviolet Irradiation in Tuberculosis.—Schall points out that ray therapy is an irritation therapy and for this reason is advisable only in some forms of tuberculosis, such as the productive, nodose cirrhotic processes. The pulmonary tuberculosis of later childhood which is usually characterized by progressiveness and a tendency to exudative processes, is unsuitable for ray therapy. Not only does the artificial irradiation involve certain dangers, but even exposure to the natural sunlight, particularly during spring seems to exert an unfavorable influence. The author suggests that this factor may be involved in the exacerbations of the tuberculous processes which frequently occur in the spring. He points out that during the winter months, from November to March, the so called Dorno rays are practically absent in the latitudes of Germany and that their reappearance in the spring has an irritating effect. He emphasizes that in tuberculous children there is not only a seasonal fluctuation in the sensitivity to the ultraviolet irradiation but also a fluctuation that is determined by the disease process. He thinks that in order to overcome the seasonal fluctuations, particularly the irritating effect of the spring sun on some tuberculous processes the patients should be subjected to artificial ultraviolet irradiation during the winter time. However, in attempts to do this, exacerbations were frequently observed. The author thinks that these failures were the result of wrong dosage and emphasizes that, before the ultraviolet irradiations are begun, the sensitivity of the patient must be tested on small areas that are especially sensitive to light (chest, back or abdomen). In order to prepare for the prophylactic irradiation during the winter time, this test should be made in November. After the erythema dose has been determined the irradiations are begun with small doses. The author advises that at first only parts of the body be irradiated. Gradually it becomes possible to prolong the exposure time and at the return of spring the effect of the natural ultraviolet irradiation does not have to be feared.

Zeitschrift für Tuberkulose, Leipzig

75 305 456 (July) 1936 Partial Index

- Prognosis of Open Tuberculosis Technic of Prognosis and Efficacy of Therapeutic Method H Braeuning and A Neisen—p 305
- Percutaneous Tuberculin Therapy A Deisz—p 323
- *Significance of Work Therapy as Key to After Care and Permanent Institutionalization of Patients with Open Tuberculosis W Lindig—p 330
- Vitamin C and Pulmonary Tuberculosis F Hasselbach—p 336
- Types of Reinfection and Dynamics of Their Pathogenesis in Roentgenogram K W Tomelzow—p 367
- Treatment of Tuberculous Empyema Following Spontaneous Pneumothorax E Muller—p 375

Work Therapy in Open Tuberculosis—Lindig discusses the importance of the after-care in two respects as completion of the clinical treatment and as a new organization of the lives of patients with incurable open tuberculosis (permanent institutionalization) He considers the promotion of work therapy the key for a successful after-care He shows that in order to insure the success of the work therapy it should begin during the period of active treatment He shows how others and he himself have tried to solve this problem, citing the work sanatoriums and the work colonies as well as the method which gives the patients an opportunity for advanced schooling He stresses that dilettantism must be avoided in work therapy, since this would result in its ultimate failure. In order to be successful, real value and accomplishment must be stressed in the work.

Vitamin C and Pulmonary Tuberculosis—In deciding to try vitamin C in the treatment of tuberculous patients, Hasselbach considered the following facts 1 There frequently exists a latent vitamin C deficiency which among other conditions, develops also in infectious diseases, particularly the chronic ones Important processes of defense against infection, of immunization and the power of resistance are connected with the consumption of vitamin C 2 The various forms of hemorrhagic diathesis are often curable by the administration of vitamin C From these considerations, the following problems arise with regard to tuberculosis 1 Is there a vitamin deficiency in tuberculosis? 2 What are the relations between tuberculosis and hemorrhagic diathesis? Studies revealed that there is a vitamin C deficiency in patients with pulmonary tuberculosis which can be compensated for by exact dosage. It was found that, on the whole, the vitamin C deficiency was the greater, the more severe was the tuberculous process In the treatment with vitamin C it must be the first aim to compensate for this deficiency For instance if there is a deficiency of from 2,000 to 2,500 mg of cevitic acid this quantity should be administered in about seven days (about 300 mg daily) After that the dosage can be gradually reduced until a daily dosage of from 100 to 150 mg has been reached, which is equivalent to the average daily requirement of the tuberculous patient The author found the intravenous administration of vitamin C to be the most advantageous in that it caused less undesirable secondary effects than the oral administration of tablets. In the course of a year the author resorted to treatment with vitamin C in about seventy tuberculous patients, the main indication for its use being the determined vitamin C deficit He considers vitamin C advisable also in certain forms of pulmonary hemorrhages and in tuberculous patients who require a tonic and thinks that the combined use of gold, tuberculin and vitamin C is likewise well founded

Wiener klinische Wochenschrift, Vienna

49 1117 1184 (Sept 11) 1936 Partial Index

- *Amebic Infection of Urinary Passages R Bachrach—p 1123
- Experiences with Electrosurgical Interventions by the Transurethral Route in Hypertrophy of Prostate and in Other Disorders of Neck of Bladder R Bachrach and E Kornitzer—p 1125
- Significance of Retrograde and Intravenous Pyelography in Practice P Blatt—p 1128
- Problem of Male Climacteric V Blum—p 1133
- Studies on Behavior of Sympathetic Nervous System in Hypertrophy of Prostate S Brugel—p 1141
- Effect of Renal Decapsulation F Fuchs—p 1144

Amebic Infection of Urinary Passages—Bachrach reports the clinical history of a man aged 46 who contracted amebic dysentery in China There he was treated successfully with emetine. The following year he developed colonic ulcers which temporarily improved after treatment but then relapsed

Renewed treatment, however, was followed by permanent cure. Several years later a hematuria developed, which was first thought to be caused by papilloma of the bladder until amebas were found in the urine However later papillomatous villi were likewise detected and cystoscopy revealed villous papilloma Finally, it was discovered that the patient had a combination of several disorders, namely, papillomatosis of the bladder, chronic gonorrhea and amebic infection of the urinary passages He was given treatment for all these disorders but finally died In discussing the case the author points out that the clinical manifestations of amebic infections in the urinary passages are not characteristic. The chief symptom is hematuria, which is frequently accompanied by dysuria

Effect of Renal Decapsulation—Fuchs points out that in acute, subacute or chronic nephritis or in nephrosis the function and the disease process of the kidney is frequently improved The effect of the intervention is quite understandable in cases in which the intracapsular pressure was increased and in which, following decapsulation, a formerly cyanotic kidney assumes a normal color However, the decapsulation is effective also if the intracapsular pressure was not noticeably increased The decapsulation is an intervention on the connective tissue apparatus of the kidney, and in order to understand the mode of action of decapsulation the morphologic conditions must be taken into consideration The author gained the impression that the surgical decapsulation of a kidney may be considered as a drainage of the intrarenal connective tissue clefts toward the bed of the kidney In the course of decapsulations, he watched whether a discharge would occur from the drainage system He actually observed frequently a copious discharge of clear fluid from the lumbotomy wound He noted, however, that the transudation became noticeable only when the bed of the kidney was drained. He mentions several other interesting observations, such as that exposure of the kidney without decapsulation is never followed by the appearance of transudate. He also cites and discusses case reports In one of the described cases the decapsulation influenced the elimination of the kidney with the exactness of an experiment

Polska Gazeta Lekarska, Lwów

15 693 712 (Sept 6) 1936

- *Abscess of the Lungs Based on Material Collected from the Hospital in Lwów A Stadnicki—p 693
- Influence of Normal Horse Serum and Postserum Diseases During Course of Typhoid B Jochweds and A Szeinberg—p 700
- *Perinephric Abscess H Drucker—p 702
- Therapy of Sciatica with Pancreas Extract Without Insulin (Angioxyle) Z Godlowski—p 706

Abscess of the Lungs—Stadnicki states that the etiology of abscess of the lungs is not clear and that a correct diagnosis is often made with the aid of roentgenology He says that the choice of therapy is difficult According to various statistics, the abscess heals by itself in from 15 to 40 per cent of the cases, generally in young persons but the author claims that this percentage is far too high Anatomopathologists look on spontaneous healing of the abscess skeptically and say that it occurs only in small abscesses The author's personal observation points in a different direction 15 per cent of healing in male patients (three healed out of 200) and 16 per cent in female patients (one healed out of sixty-five) The operation for abscess of the lungs in persons less than 40 years of age offers a better chance for recovery, but beyond the age of 40 the results are poor and depend on the length of time the abscess has existed This influences the decision as to the method of treatment Conservative treatment is given for from six to eight weeks and, if that fails, operation becomes unavoidable although the outcome is rather doubtful Treatment of abscess of the lungs has the advantages of (1) emptying the pus (2) aiding expectoration and (3) raising the resistance, which is the most important point.

Perinephric Abscess—Drucker says that at the general hospital in the city of Lwów all patients suspected of having perinephric abscess undergo aspiration with trocar and needle for examination before operation. The puncture is done under local anesthesia just under the twelfth rib in the sitting position at the most painful and swollen site. No complication

has been encountered. Statistics show that perinephric abscess affects male patients oftener than female because males are more exposed to traumatic injury or infection. Perinephric abscess generally occurs between the ages of 20 and 40 and is rare in older persons. The incubation period varies from a few days to a year, it often appears in the acute stage but may develop slowly. The treatment of perinephric abscess may be conservative by roentgen rays, and aspiration with a trocar, or surgical. An incision is made from 8 to 10 cm long near the edge of the sacrospinalis muscle. The prognosis in general is good but depends a great deal on the cause of the abscess and on correct early diagnosis. Lethal cases are rare, death occurring through delayed diagnosis and negligence or when the abscess causes general infection and the resistance is not strong enough to overcome the infection.

Klinicheskaya Meditsina, Moscow

14 1097 1250 (No. 8) 1936 Partial Index

Cardiac Therapy in Light of Experimental Pharmacology S V Anichkov—p 1097

Pneumococci P P Dzvizhkov—p 1105

Clinical Interpretation of Hemograms in Pulmonary Tuberculosis N N Bobrov and S N Gorkina—p 1117

*Syphilitic Antigen Therapy of Syphilis A A Veviorovskiy—p 1124

Vegetative Changes Following Procaine Hydrochloride Injections in Treatment of Peripheral Nervous Diseases I I Rusetskiy and I I Popov—p 1131

Procaine Hydrochloride Blockade in Internal Medicine A N Kryukov and D Vaza—p 1144

Treatment of Syphilis with Syphilitic Antigens—Veviorovskiy reports animal experiments and clinical results with a syphilitic antigen prepared from organs infected with syphilis, from syphilitic fetuses or from spirochete cultures. Because of the importance of the skin as a defense organ in infectious diseases, the author administered his vaccine by rubbing it into the skin or by intracutaneous injections. Experimentally produced chancres in rabbits disappeared in a shorter time under this treatment than when treated with the usual methods. The grafting of the organs and lymph nodes of these rabbits into healthy rabbits failed to produce chancres or general manifestations of syphilis. Application of vaccine therapy in cases of dementia paralytica and syphilis of the brain resulted in an improvement in the state of the cerebrospinal fluid, the general state and the psychic state. Patients gained weight, their headaches disappeared, the speech improved and the behavior became rational. In individual cases there were noted disappearance of Romberg's sign, return of the pupillary reactions, improvement in the knee jerks, disappearance of ideas of persecution and of hallucinations, and improvement in the muscular power of extremities and in the gait. In view of the fact that the development of late syphilitic lesions of the central nervous system cannot be prevented in all cases by the administration of mercury or bismuth preparations or arsphenamine, the author considers his method to be the logical continuation of the radical treatment of syphilis. This does not exclude the treatment of early syphilis with the modern methods.

Acta Medica Scandinavica, Stockholm

89 517 616 (Sept. 19) 1936

Cushing Syndrome Report of Case Treated with Roentgen Ray P Hanssen—p 517

*Anemia in Myxedema Patients S A. Holbøll—p 526

Kymographic Studies on Influence of Brief Muscular Work on Heart Function B. Faber and H. Kjærsgaard—p 537

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Infection Theory and Epidemiology A. Gottstein—p 564

Contribution to Aureoetoxin Treatment of Chronic Infectious Arthritis E. Gripwall—p 587

*Polyarthritides Urethritica O. Moltke—p 606

Anemia in Myxedema Patients—Of twenty-eight patients examined and treated by Holbøll during the last five years all were women and none had congenital myxedema. Two had suffered from exophthalmic goiter previously. The ages of the patients varied from 35 to 64 years. The diagnosis of myxedema was confirmed not only by means of clinical observations but through determinations of the metabolism. The majority of the women had been suffering from their disease for five or six years. A number of these patients had sought medical advice and had been admitted to a hospital. Most frequently

they had been treated for neurasthenia, cardiac disorders and what is of especial interest here, anemia. Six of the patients had been treated with stomach or liver preparations, and no less than twenty had been given iron. In thirteen the hemoglobin rate was below 70, and in seven between 70 and 79 per cent. In the majority the color index was normal or slightly subnormal, the lowest being 0.78. Besides, in the patients with pernicious anemia, the color index was increased in four cases. The conclusion is that in cases of anemia of unknown etiology, when the usual remedies fail, the diagnosis of myxedema should always be considered. Contrary to what is usually stated in manuals and textbooks, eosinophilia was never found. In the twenty-eight patients there was never more than 3 per cent of eosinophil leukocytes. There were no cases of abnormal leukocytes, especially the myeloblast-like cells also referred to in textbooks. In most cases, however, there was rather considerable lymphocytosis. The highest rate was 62 per cent of lymphocytes, while values of about 50 per cent were frequent. The number of monocytes was, as a rule, about 4 per cent, the highest value being 6. These results apply to the untreated myxedema patients. During the thyroid therapy the percentage of lymphocytes decreased a little in most cases, but completely normal lymphocyte figures were not always attained in the course of the first few months. In the majority of untreated cases the sedimentation reaction was increased. The increase of the sedimentation was usually higher than what could be ascribed to the anemia alone. Thyroidin therapy had a favorable influence on the anemic condition in all cases, both the hyperchromatic and the hypochromatic ones. The most rapid improvement of the red blood picture was obtained through combination of thyroidin with iron. A few attempts at reproducing the anemic condition indicate that the color index in the individual case of myxedema is still of the same character.

Polyarthritides Urethritica—Moltke concerns himself with five cases of acute polyarthritides with urethritis, superficially resembling the gonorrheal type but differing from it clinically, bacteriologically and immunologically in so unambiguous a manner that they must be regarded as a separate disease, one that apparently has had too little attention paid to it. All the patients were men. Urethritis of such slight degrees as these might easily pass unnoticed in women. On the other hand, the author has no recollection of acute polyarthritides in women with a clinical picture quite like these. Two of the five patients had previously had a gonorrheal infection. The clinical character of even these polyarthritides is far removed from the gonorrheal type. Gonococci were not found in the urethral secretion of any of these patients and the gonococcus complement fixation test was negative for all. Clinically, these joint disturbances present themselves in a manner which merely superficially has some resemblance to gonorrheal arthritis. The disorder has been polyarticular, on the whole of a brief and benign character. In several of the cases there was a distinct tendency to exudation in the affected joints, especially the knee but it disappeared spontaneously or after brief treatment. There was no approach to joint symmetry in the diffusion of the disease, and mostly the large joints were attacked. Thus the possibility of an atypical gonorrheal arthritis may be discarded as an explanation of these cases. Judging from all the facts, they must have been cases of some special disease, the principal characteristics of which are the febrile polyarthritides and the nongonorrheal urethritis. The author compares his cases with those described from Germany and by Kristjansens in Denmark. The only difference is that his cases have lacked the conjunctivitis which is so prominent in the records of the others. The similarities are so considerable that they outweigh the absence of this one symptom. That there is close connection between the urethritis and polyarthritides seems to appear from the fact that these two manifestations occur simultaneously in most of the patients. That it may be both an anterior and a posterior urethritis is shown by the fact that in two patients it has been possible to demonstrate the presence of "threads" in the urine. For the present the author is unable to decide whether the joint symptoms and the urethritis are collateral phenomena whether they are simultaneous manifestations of a common etiologic factor, or whether the urethritis is primary in relation to the arthritis (as in the gonorrheal type).

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TUBERCULOSIS OF THE HIP IN CHILDREN

JOSEPH S BARR, M.D.
BOSTON

The data and conclusions of this paper are derived from the study of the records and roentgen examinations of 106 consecutive cases admitted to the New England Peabody Home for Crippled Children with a diagnosis of tuberculosis of the hip

DIAGNOSIS

In 15 per cent it was later found that an incorrect admission diagnosis had been made. It is most important to exclude such cases, as they have in general a much more favorable prognosis than tuberculosis of the hip.

The ninety remaining cases were accepted as tuberculosis for one or more of the following reasons:

1. Positive guinea-pig test from material removed by aspiration or operation. Twenty nine cases, or 32 per cent, were proved by this method.

2. Positive evidence of tuberculosis on pathologic examination of material removed at operation. In seventeen of the twenty-two cases in which pathologic material was examined, the histologic diagnosis was tuberculosis. The remaining five were reported as chronic inflammation not definitely characteristic of tuberculosis.

3. Positive intradermal (Mantoux) test with a clinical course of progressive destruction of the hip and the other characteristic features of acid-fast infection in the hip joint. In the sixty six cases in which the Mantoux intradermal tuberculin test was done it was positive in dilutions of 1:1,000 or higher in every instance. The other cases had been discharged before this test came into vogue. Our experience with the use of graded tuberculins leads us to believe that every case of active tuberculosis will show a skin reaction in dilutions of 1:1,000 or higher.

The average age at onset was 4 years. In 60 per cent of the cases the onset was prior to the age of 6.

TREATMENT

In the forty year period that has elapsed since the first case in this series was admitted with this diagnosis, the treatment has varied with the prevailing medical fashion. Until 1920 the treatment was expectant. The child was ambulatory except when unable to be up. The Bradford and Taylor hip splints were commonly used. Abscesses were often evacuated operatively, the cavity was wiped out with gauze and sinuses were dressed with little attention to asepsis. Plaster spicas were used for long periods of immobilization.

From the New England Peabody Home for Crippled Children, Newton Centre, Mass.
Read before the Section on Orthopedic Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

During the ten years 1920-1930 the heliotherapeutic regimen of Rollier held sway. In every acute case the patient was placed on a Bradford frame and the hip immobilized by adhesive extension. No surgery was performed. The abscesses were allowed to rupture spontaneously. The patient's skin was exposed to the sun's rays, often supplemented by the quartz or carbon arc lamps. The progress of the disease was checked every six weeks by x-ray and physical examinations. The patient was allowed up only after all signs and symptoms of active disease had subsided. A number of cases were deliberately "overtreated," absolute bed care being maintained for as long as two years after the process had become quiescent.

In 1930, cautiously and belatedly following our New York brothers, we began to supplement the Rollier treatment with arthrodesis of the hip.

We have tried both conservative and operative methods without prejudice in a hospital with every facility for adequate prolonged care of the patient. An attempt has been made to ascertain by physical and x-ray examination the present condition in every case.

MORTALITY

There are two main causes of death. The first is tuberculous meningitis, which accounted for 47 per cent of the mortality. It occurs usually within the first two years after the onset. The blood stream infection that causes the hip disease may also account for the meningitis. It is quite probable that the mortality due to meningitis is about the same no matter what type of therapy is instituted. Complete bed rest might be of value, but there is no definite evidence that it has any effect in lowering the mortality rate of meningitis. Arthrodesis of the hip might possibly increase the mortality from this cause, it could hardly lower its incidence.

Deep seated secondary pyogenic infection of tuberculous sinuses with resultant amyloid disease and cachexia is the other great cause of death in tuberculosis of the hip. It accounted for six cases, or 40 per cent, of the deaths in this series. This deplorable complication, which is so commonly fatal, is almost if not entirely preventable. If no other point is made in this paper it will be worth while if I can draw attention to these facts.

- (a) Tuberculous soft tissue abscesses develop from tuberculous hips in a very high percentage of cases (60 per cent in this series) at some stage in the evolution of the disease, no matter what treatment is used.

- (b) These abscesses are occasionally absorbed without breaking through the skin but usually rupture through the skin.

- (c) If a tuberculous sinus does not become secondarily infected it will always heal spontaneously.

When a cold abscess becomes superficial, the skin over it is cleansed carefully with soap and water and alcohol and a sterile dressing applied. We usually aspirate the abscess to obtain material for diagnostic purposes. Otherwise we allow it to rupture spontaneously. The dressings are changed as often as necessary, twice daily if the drainage is copious. The skin is cleansed with alcohol and is protected from maceration with boric strips. We use no irrigating solutions, tubes or wicks. Careful dry sterile dressing is all that is necessary. Since this regimen was instituted at the New England Peabody Home for Crippled Children, no sinus has failed to heal spontaneously, usually within a few months after rupture. The deaths from secondary infection in this series occurred in cases treated before this regimen was used or in cases in which secondary infection had already occurred when they were admitted.

The treatment of sinuses that are already secondarily infected is a problem not yet solved. We believe that judicious surgery to insure adequate dependent drainage is indicated in most instances. Amyloid disease already present will regress if the deep seated infection is controlled.

BIOPSY, JOINT EXPLORATION AND ASPIRATION

Suspected cases of tuberculosis of the hip often present great difficulty in early diagnosis. Clinical and x-ray examination may present no absolutely positive diagnostic points. I believe that aspiration may be justified in those circumstances in an attempt to obtain

TABLE 1—Final Diagnosis Made in 106 Cases Admitted to the Home as Tuberculosis of the Hip

Final Diagnosis	Cases
Toxic arthritis	6
Legg Perthes disease	1
Tuberculosis of the trochanter	1
?Tuberculous rheumatism	1
Diagnosis unknown (not sufficient data)	7
Total	16 (15%)
Tuberculosis of the hip	90 (85%)

TABLE 2—Associated Tuberculous Lesions Other Than Tracheo-bronchial Glands in Ninety Cases of Tuberculosis of the Hip

	Cases
Both hips	3
Spine	6
Other bone focus	7
Kidney	3
Lung	1
Cervical adenitis	2
Meningitis	7
Lupus	1
Total	30 (33%)

material for examination. Our experience with biopsy and joint exploration in early acute cases had led me to believe that they should not be done. Table 5 presents the data on which this statement is based.

COURSE OF THE DISEASE

Tuberculosis of the hip, like tuberculosis elsewhere in the body, runs a most variable course. The evaluation of the effect of any given therapeutic measure is difficult, as the expected course of the disease in any given case cannot be certainly predicted. During the acute

stage there is marked decalcification and haziness of bony detail of the ilium and femur. Its presence seems to indicate active disease. In addition to decalcification and possible increase in bone destruction, as shown by x-ray examination, the presence of involuntary muscle spasm on attempted motion of the hip and abscesses or

TABLE 3—Present Status of All Cases

	Well	Acute	Dead	Untraced	Total
Group 1 Cases treated before 1920 no fusion attempted.	13	6	11	14	44
Group 2 Cases treated after 1920 no fusion attempted	4	1	3	1	9
Group 3 Fusion in the early stages of the disease	1		1	0	2
Group 4 Fusion after the disease became quiescent	20	1	0	0	21
Group 5 Still in home acute or awaiting fusion	0	12	0	0	12
Total	43 46%	20 21%	15 16.5%	15 16.5%	93 Hips 90 Patients

TABLE 4—Cause of Death

Cause of Death	Cases	Duration of Life from Onset
Tuberculous meningitis	7	All within 4 years
Secondary infection amyloid and so on	6	5 14 18 20 years
Pulmonary	2	
Total	15	16.6%

sinuses are reliable indexes of an active process. The amount of actual bone destruction that occurs is extraordinarily variable. In some cases there is little or no bone destruction and the joint space is narrowed, allowing bony contact between the femur and the acetabulum but with the normal bone contour essentially unchanged. In other cases the head and most of the neck of the femur together with a large portion of the ilium may be completely destroyed. In over half of the cases abscesses develop. Eventually, however, every case of tuberculosis of the hip, uncomplicated by secondary infection, passes from the acute into a chronic or arrested state. Muscle spasm disappears, sinuses are healed and there is no evidence of abscess formation. X-ray examination shows at least fairly normal bone density and no further spread of the destructive process. In some of the cases apparent bone cavities seem to fill up. The blood picture shows a return to normal of the monocyte/lymphocyte ratio.

In other words, an inevitable histologic sequence to a pathologic process has taken place, the tuberculous process has become walled off by a zone of local defense. A barrier of fibrous tissue prevents the absorption of toxic products. The spread of the destructive process is "arrested." It has not yet been demonstrated that a tuberculous hip is ever "cured," i.e., that all the bacilli have been killed. Half of our cases became quiescent within two years after admission. All the cases were quiescent after four years of treatment.

HELIO THERAPY

For over twenty years heliotherapy in the treatment of bone and joint tuberculosis has been used at the New England Peabody Home. The term heliotherapy is used in Rollier's sense of sunshine, bed rest, fresh air and the like.

The effect of the sun's rays on bone and joint tuberculosis has been stated by author after author to be extremely beneficial, even specific. Our¹ results do not verify these conclusions. We find that the blood picture, the roentgenograms and the clinical appearance of cases that have been treated intensively by sunshine either natural or artificial, are no better than those of cases treated in the open ward with no direct solar irradiation.

We believe that complete rest, local and general, with a good general regimen such as is used in pulmonary tuberculosis does influence favorably the natural course of the disease. The natural course of the disease in an individual case may be mild or it may be extremely severe, but it is probably not appreciably influenced by intensive solar irradiation. A moderate amount of sunshine is of course good for almost any one, whether suffering from tuberculosis of the hip or not.

FUSION

Attempted arthrodesis in the early active stages of the disease is advocated by certain surgeons. Our follow-up study and comparison of our results with other pub-

the disease would take me far beyond the limits of this paper. The more valid objections to fusion in the presence of active disease are that

- 1 The mortality rate both operative and remote is much higher than in quiescent cases
- 2 There is probably no more than 50 per cent² successful fusion, no matter what method is used

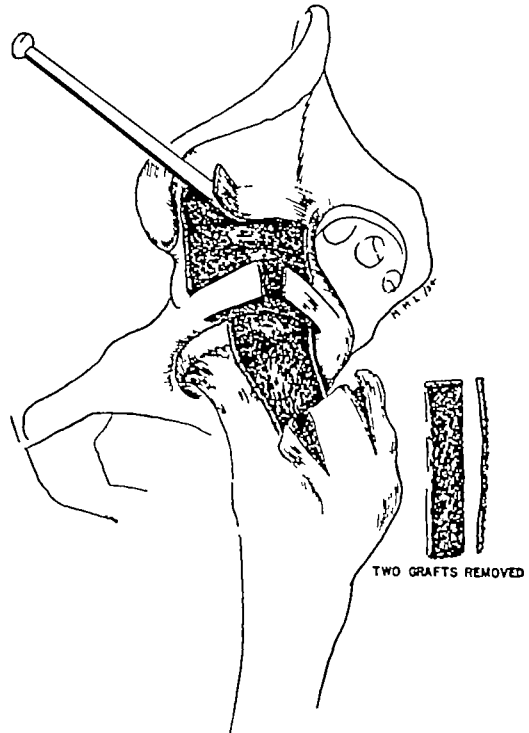


Fig. 2—Technic of removal of the grafts.

3 Even if fusion is successful, the focus can be eradicated only by the natural process of repair through local and general resistance to the disease. The "curative" effect of fusion is in

TABLE 5—The Effect of Arthrotoomy on the Mortality and on Sinus Formation

	Mor- tality		Sinuses		No Sinuses		Secondary Infection		Amyloid	
	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
Biopsy (wound closed)										
9 cases	2	22	8	90	1	10	5	55	1	11
Incision and Drainage										
5 cases	2	40	5	100	—	—	4	80	2	40
Total 14 cases ^a	4	28	13	93	1	7	9	64	3	21
of										
Total series 90 cases	15	16.6	64	60	36	40	14	15	6	7

fact simply the natural course of the disease toward an arrested state. That will occur inevitably, whether fusion is attempted or heliotherapy is instituted or any of the other purported cures are used.

Our attempts to restore "arrested" cases to normal activity without surgery have been most disappointing. Reactivation of the process as shown by pain, muscle spasm, abscess formation, increasing deformity, and the like occurred frequently even after four or five years of complete bed rest. We believe that a fused hip

Fig. 1—Diagrammatic illustration of the operative exposure

lished series leads us to believe that arthrodesis should not be attempted until the disease process is quiescent, as shown by physical and x-ray examination.

To discuss all the arguments for and against attempted arthrodesis of the hip in the active stage of

¹ Barr, J. S. Heliotherapy in the Treatment of Surgical Tuberculosis. *New England J. Med.* 208:131-134 (Jan. 19) 1933. Hoeffel, G. and Lyons, D. Heliotherapy and the Peripheral Blood. *Am. J. Dis. Child.* 40:484-492 (Sept.) 1930.

² Hallock, Halford and Toumey, J. W. Hip Joint Tuberculosis Treated by Fusion Operation. *J. A. M. A.* 103:1836-1840 (Dec. 15) 1934.

has a much better chance to remain arrested than one which has a little motion present. Rarely a conservatively treated patient will retain useful hip motion and the disease remain quiescent when full activity is allowed, but in most instances the amount of motion that is retained is useless and probably dangerous.

The treatment of bilateral tuberculosis of the hip is difficult. A satisfactory result was obtained in one case by arthrodesing one hip and doing a Jones pseudarthrosis in the other. A range of motion was thus obtained which permitted sitting, standing and walking.

OPERATIVE TECHNIC

Many methods of fusing the hip joint have been described. The reader is referred to Ghormley's³ excellent article for a summary of those chiefly in vogue.

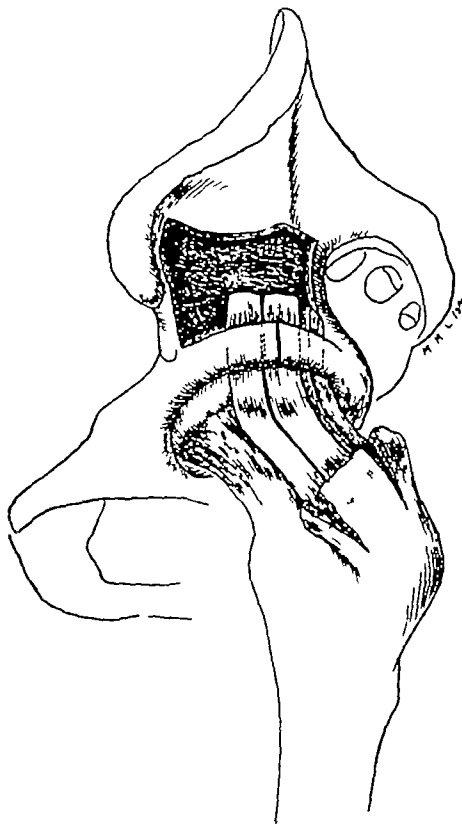


Fig. 3—Grafts in position. In actual cases the grafts cover the neck of the femur farther anteriorly than is shown in the illustration.

Intra-articular arthrodesis, requiring dislocation of the head of the femur, excision of the articular cartilage and replacement of the denuded surfaces in contact, is mentioned only to condemn it. The mortality is high and successful fusion is obtained in less than half the cases. The massive graft, whether the technic is that of Hibbs, Albee, Chandler, Eikenbary or Ghormley, is technically difficult in children. There is considerable cartilage about the epiphysis of the great trochanter which may prevent bony apposition at this point. The attached abductor muscles may tend to displace the graft. The position of the leg must not be altered after the graft is placed because of the danger of losing bony contact. Exact maintenance of the position during closure of the wound and appli-

cation of a plaster spica is not easy. For these and other reasons it was decided to use multiple flexible grafts from the ilium. At first the technic of Wilson⁴ was used, bending the grafts over in "crown roast" fashion and leaving them attached just above the acetabulum. They tend to break as they are bent, thus leaving a vulnerable spot just above the joint line. With a growing realization that cancellous bone is the best of osteogenic material, we began cutting free grafts from the outer table of the ilium and placing them across the joint line.

We use tribrom-ethanol anesthesia (80 mg.) supplemented with ether. The hip joint is exposed through the Smith-Petersen incision. The capsule is incised longitudinally and dissected off the acetabulum and neck of the femur. The visible cartilage on the rim of the acetabulum and the head of the femur is removed, but no attempt is made to remove all the diseased tissue. With a sharp osteotome a cortical flap of bone is raised posteriorly, laterally and anteriorly from the neck of the femur and greater trochanter. These flaps are levered out carefully, being left attached inferiorly to the shaft of the femur. Three or four grafts are then removed from the wing of the ilium, each one from 3 to 5 inches long and from one-half to 1 inch wide and the thickness of the outer table of the ilium. The grafts are slid downward so that they surround the neck of the femur, the lower end of each one being firmly wedged beneath the raised femoral flaps. The upper end of each graft is in contact with the bare cancellous inner table of the ilium. A small "trap door" raised from the ilium just above the acetabulum is laid across the grafts. The anterior-superior spine is not removed, as there is sufficient bone available without using it. We feel that the pelvic contour is unnecessarily mutilated and that an essential landmark for measurement of the length of the leg is lost when the iliac crest is cut off.

The wound is closed carefully, and after application of a firm ace bandage spica over the sterile dressings the child is placed on a slightly hyperextended Bradford frame with the leg immobilized by from 5 to 8 pounds weight on a canvas stocking extension. This method of immediate postoperative treatment has several advantages. The elastic bandage prevents excessive bleeding and hematoma formation. In many instances there is practically no staining of the dressings. The child is not subjected to the additional shock of application of a wet cast at the end of a major operation.

Without undue haste the operative procedure can be completed and the child returned to bed in less than an hour.

The skin sutures are removed on the tenth postoperative day. A plaster spica is then applied from the ribs to the toes on the affected side and to the opposite knee. This is done without anesthesia. Minor changes in position of the femur may be made without pain if it is done slowly, thus immobilizing the hip in exactly the desired position.

The best position for the fused hip was found to be about 20 to 25 degrees of permanent flexion, from 0 to 15 degrees of abduction, and from 0 to 5 degrees of external rotation. It has been found necessary, in order to obtain that ultimate position, to place the leg

³ Ghormley R. K. Use of the Anterior Superior Spine and Crest of Ilium in Surgery of the Hip Joint. *J. Bone & Joint Surg.* 13: 784-798 (Oct.) 1931.

⁴ Wilson J. C. Operative Fixation of Tuberculous Hips in Children. *J. Bone & Joint Surg.* 15: 22-47 (Jan.) 1933.

in full extension with from 15 to 20 degrees of abduction, otherwise, flexion and adduction deformity was prone to occur, requiring later osteotomy for its correction. At the end of four months the patient is allowed to bear weight on the affected hip, using crutches and a single spica extending to the ankle. This apparatus is continued until solid fusion is demonstrated by x-ray examination. Prolonged physical therapy to develop good musculature and proper gait was necessary in most instances after the cast had been discarded.

Bony fusion of a hip once obtained changes the case from one of joint tuberculosis to tuberculosis of a long bone. The focus is not eradicated by the fusion and it is still necessary to rely on the natural body defense mechanism to produce complete arrest of the disease.

In most cases the juxta-articular fusion produced by operation is followed by eventual intra-articular fusion, but in certain instances the tuberculous process remains active and the destructive process continues to spread after bony fusion has been obtained. Such cases are

TABLE 6—Present Status of the Ninety-Three Hips

Fused	{ Good position	19
	{ Fair position	8
	{ Poor position	1
Total		28
Unfused	{ Good position	10
	{ Fair position	12
	{ Poor position	9
	Jones pseudarthrosis	1
Total		32
Dead unknown and acute		33
Total		93

detected chiefly by x-ray comparison. It is important to follow all cases for a long period (at least five years) after fusion has been obtained. A false sense of security may be associated with fusion. There can be no muscle spasm or increasing deformity, and there is actually little pain present even when the disease is spreading in a fused hip. The danger signals have been removed but the danger remains.

OPERATIVE RESULTS

In twenty-three consecutive cases operation by this technic has been done. In two the end results are not available because they are too recent. There were no deaths and no operative complications (shock, sepsis and the like). Eighteen, or 86 per cent, of the patients have obtained solid fusion both clinically and by x-ray examination.

In one of the three failures operation has been done a second time with a second failure of fusion. Each failure has been checked carefully for the various possible causes. I believe that destruction of the grafts by extension of the tuberculous process was the cause in each instance. Areas of active disease were encountered in each of these cases at the time of operation.

SUMMARY AND CONCLUSIONS

Ninety cases of tuberculosis of the hip have been admitted to the New England Peabody Home for Crippled Children in the past forty years. The present status of all but sixteen of the cases is known.

Tuberculosis of the hip is often misdiagnosed (15 per cent of this series).

The chief causes of death are tuberculous meningitis and secondary infection of draining sinuses. For the first of these causes no therapy is available. The second one can be reduced to the vanishing point by scrupulous sterile dressing of sinuses and by refraining from any surgical intervention during the active stages of the disease.

Tuberculosis of the hip runs an extraordinarily variable course. Heliotherapy seems to have no specific curative effect on the disease. The word "cured" should be dropped for the more conservative "arrested." Fusion of the hip was successful in 86 per cent of a series of twenty-three consecutive cases. Failure of fusion was due apparently to extension of the disease to the grafts. In a few instances even after successful fusion in apparently arrested cases there was evidence of active disease present when the follow-up study was made.

Arrest of the disease with a useful range of motion occurs too rarely to make it an expected result in conservatively treated cases. Fusion is not a "cure" but offers the best chance for an arrested disease process to remain quiescent and give a stable weight bearing limb. We advise complete bed rest and interdict surgery during the acute stage of the disease, which may last from a few months to three or four years. The hip should then be fused and the case followed for at least five years longer. Under this regimen one may expect to reduce the mortality rate and to return almost all the remaining patients to fairly normal economic and social activity. This paper is not an "end result study." When these ninety patients shall all have died, I hope that some as yet unknown author will report the actual end results and plot graphically the course of the disease, which by that time will be a clinical rarity.

234 Marlborough Street

ABSTRACT OF DISCUSSION

DR. JOHN C. WILSON, Los Angeles. My experience with biopsy has differed somewhat from that of Dr. Barr. I have not fused hips without a positive diagnosis of tuberculosis. The diagnosis of tuberculosis cannot be made in the early stages without examination of tissue under the microscope. I have not observed any serious disturbance following a biopsy, provided the biopsy was carefully done. Tissues, of course must be handled gently. Tuberculosis may develop along the operative approach if the tissues are not properly packed off at the time the tuberculous focus is encountered. The period of rest prior to operation is of interest. I have not been able to obtain satisfactory rest of the tuberculous hip with mechanical devices. The operation is done to put the infected hip at rest, and an early fusion promotes early healing of a tuberculous joint. The early healing of the joint prevents a destruction of the capital epiphysis, which is of importance, because the preservation of this epiphysis limits the shortening. Dr. Barr has brought out another very important point with which I agree, that fusion of the hip transforms the tuberculosis from a joint infection to tuberculous infection of a long bone. In other words, tuberculosis is a constitutional disease, and the simple fusion or splinting of the hip in no manner effects a cure until the organism as a whole has supplied sufficient antibodies to build up resistance and produce healing.

DR. HALFORD HALLOCK, New York. The most important idea in Dr. Barr's paper is that he advises fusion as the treatment that will give the best prospect of a stable weight bearing extremity free from disease activity. At the New York Orthopedic Hospital we gave up conservative treatment because we could not get results with it. In 1928 Smith and Watters (*THE JOURNAL*, Jan. 21, 1928, p. 189) reported the results obtained by this method in 150 cases. These were 47 per cent still active, 27 per cent quiescent, two patients free from symptoms

and with useful motion, and 24 per cent deaths. In 1934 Dr Toumey and I (THE JOURNAL, Dec 15, 1934, p 1836) reported the results in 170 unselected cases treated by fusion, 87 per cent are fused, 8.2 per cent of the patients have died. Dr Barr believes from his experience that biopsy should not be done. His figures for the patients subjected to biopsy alone are given in the accompanying table. In any comparative statistical study, one must determine what constitutes significant differences of percentage in relation to number of cases. In the study of fused hips, we set up the following standard. If the group of cases under analysis comprises less than one tenth of the whole series, 20 per cent is considered to be the least amount of difference to which significance can be attached, if from one tenth to one half, 15 per cent, if one half or over, 10 per cent. On this basis, Dr Barr's figures indicate an

Comparative Results of Biopsy

	Mortality		Sinuses	Amyloidosis
Biopsy cases.	9	22%	90%	11%
Total series	90	10.6	60	7
Percentage difference	5.4%		30%	4%

increased hazard only in sinus formation. I believe that the establishment of the diagnosis is of supreme importance because of the necessity for accurate treatment. But before opening a suspected joint, I have permission to fuse if tuberculosis is proved. Dr Barr states that in certain cases the tuberculous process remained active after fusion had been obtained. The subsidence of the disease does not immediately or rapidly follow on fusion, and for the complete replacement of the diseased area by healthy appearing bone, usually three to five years is required. If, however, roentgenographic intra-articular disease activity continues for six months or more after fusion has apparently been obtained, or if the ultimate result of fusion through the diseased area is not secured in from three to five years, I feel that that hip is probably not fused.

DR. J. S. BARR, Boston. The present status of the ninety cases is as follows: Twenty-eight of the hips are fused clinically and on x-ray evidence, and thirty-two are not fused. One patient has a Jones pseudarthrosis; thirty-three are dead or with an unknown or an acute condition. Bilateral tuberculosis of the hip still presents an extremely difficult problem. I have been unable to solve it, but I have approached one case in this manner. I did an arthrodesis on one side and a Jones pseudarthrosis on the other side. The boy is able to walk short distances without apparatus of any kind. Outdoors he carries a pair of crutches but uses them more for balance than for support. It is interesting to note that, after the pseudarthrosis was done, the hip developed complete intra-articular fusion on that side. Every one has his own pet method of fusing hips and assumes that, because he fuses them in a certain way, therefore the results are good. I have no particular brief for the method that I use. It is a slight modification of Dr Wilson's method and I feel that it is an efficient one. I could show slides of a whole series which show in general fusions of that type. The point I am trying to make is that I believe that tuberculosis of the hip, like tuberculosis of the lung, is not a disease to be treated in a general hospital; that, when the diagnosis is made, the patient should be placed in a sanatorium and be put to bed. Then when the disease becomes quiescent, the hip should be fused. Dr Hallock said that they have given up conservative treatment in New York. I am quite certain he didn't mean that in the way he said it because, after a hip is fused there is at least six months or a year of treatment in a plaster cast, and obviously that is conservative treatment. If the fusion doesn't take place intra-articularly for four or five years, he is still treating the patients conservatively giving them bed rest and as much fresh air and sunshine as possible and a good general regimen which is known to be useful in tuberculosis. The only difference in opinion, I believe between the two schools is that they feel that fusion actually hastens the process of repair. I believe that rest with traction, in bed will produce that arrest about as quickly and with much less danger than will fusion done early in the disease.

MAINTENANCE OF NORMAL WATER EXCHANGE WITH INTRAVENOUS FLUIDS

FREDERICK A. COLLIER, M.D.
VERNON S. DICK, M.D.
AND
WALTER G. MADDOCK, M.D.
ANN ARBOR, MICH.

One of the most important advances in modern medicine is the ability to supply the sick patient with water, food and other chemicals when their normal ingestion from the gastro-intestinal tract has been disturbed. The need for and the value of this parenteral therapy are well established. Prolonged nausea and vomiting may warrant its use, or rest of the gastro-intestinal tract may be desired following operations on it, hemorrhages in it, or inflammations involving any portions of its length. Occasionally inanition may be so marked that fluid and food must be so supplied. In many instances this therapy is the chief aid in carrying a sick patient over a critical period of his illness, and fortunately in recent years physicians have done better in eliminating reactions from such treatment.

Opinions vary somewhat as to the choice of fluid for parenteral administration.¹ A number of factors are involved in the selection, but the fundamental proposition is that of supplying as nearly as possible what the patient needs. In the majority of cases water is of first importance, and our purpose in this paper is to present the results of an investigation on the efficiency of the commonly used solutions in maintaining a normal water exchange. A brief discussion of the amount given and its combination with dextrose and sodium chloride is in order.

From a series of studies on the water requirements of surgical patients, the quantity needed by them daily under various conditions of disease and treatment was determined.² A few statements from the data obtained will develop the reasons for the amount of fluid given to the patients of this study.

Water normally becomes available from fluids drunk and food eaten and is excreted in urine, in the stool, and by vaporization from the skin and lungs. In persons in whom the intake of fluid and food is stopped, available water is importantly affected. Ordinarily the food of a routine maintenance diet furnishes from 1,200 to 1,500 cc of water daily, but in starvation rarely more than 500 cc of water becomes available from the body material oxidized for energy, and with no fluids drunk this is all there is to balance the daily output. Practically, this amount is too small for consideration and can well be forgotten in estimations of the water needs of the seriously ill individual.

On the outgoing side, the surgical patient, the same as the healthy person, excretes water for two physiologic functions: the dissipation of heat by vaporizing water from the skin and lungs, and the excretion of waste materials in solution through the kidneys. The

From the Department of Surgery of the University of Michigan Medical School.

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1. Cutter, R. K. Use of Large Volume Intravenous Injections. J. A. M. A. 106:1250 (April 11) 1936.

2. Collier, F. A. and Maddock, W. G. Water Balance in Surgical Conditions. Internat. Clin. 3:191 (Sept.) 1934. A Study of Dehydration in Humans. Ann. Surg. 102:947 (Nov.) 1935.

water loss in feces is insignificant in most surgical conditions and can generally be disregarded. Water vaporized by the average adult patient convalescing uneventfully amounts to from 1,000 to 1,500 cc daily. The sick surgical patient, frequently the one with increased metabolism from hyperthyroidism or fever, vaporizes from 1,500 to 2,500 cc daily, with a fair average of 2 liters a day. Water for urine is the next problem and should be an amount that will enable kidneys of various concentrating ability to excrete the daily waste materials presented to them without having to work at their maximum rate. For the sick surgical patient this should be a urine output of at least 1,500 cc a day, and accordingly 1,500 cc of water is allowed daily for this purpose. Then there may be abnormal losses of fluid to consider, such as by vomiting, drainage from intestinal or biliary fistulas, or sputum. To summarize the amount of water to be given to the sick surgical patient to provide for his daily water excretions and thus to maintain body fluids at their normal level can be calculated as follows: (1) water for vaporization, 2,000 cc, (2) water for urine, 1,500 cc, (3) abnormal losses—vomitus and so on, total, 3,500 cc.

If one is dealing with a dehydrated patient, this maintenance amount of water is not enough and some extra water must be provided to restore the fluid previously lost.² Since the subjects used in this study were not dehydrated, they were given about 3,500 cc of intravenous fluids daily.

Dextrose should be supplied to all patients receiving parenteral fluids. When no food is taken by mouth the glycogen supply of the body rapidly becomes exhausted. Fat, which then forms the main food, tends to be incompletely oxidized and the consequent accumulation of oxibutyric and diacetic acids results in ketosis. This faulty metabolism is prevented when dextrose is provided. The advantage of the protection afforded the liver by carbohydrates must also be considered, along with the value of the number of calories supplied.

The importance of administering sodium chloride solutions parenterally to some patients has been well established. The experimental work of Hartwell and Hoguet,³ Orr and Haden⁴ and McIver and Gamble⁵ has demonstrated that, after the production of a high intestinal obstruction with its associated pernicious vomiting the lives of animals could be continued indefinitely if they were given a sodium chloride solution intravenously, whereas untreated animals or those given other solutions even if isotonic, were not saved. Clinical experiences in dealing with patients who have lost appreciable amounts of gastro-intestinal secretions from any cause have corroborated the unquestionable value of salt solution parenterally in such instances.

The two fluids most commonly used to restore lost electrolytes are physiologic solution of sodium chloride which contains 8.5 Gm of sodium chloride per liter, and Ringer's solution, which besides having 8.5 Gm of sodium chloride also contains 0.3 Gm of potassium chloride and 0.2 Gm of calcium chloride per liter. Potassium and calcium ions have been shown to have a beneficial action on the heart beat, and their presence in Ringer's solution in approximately the same ratio to sodium as that of the blood serum is thought by some

surgeons, notably Horsley,⁶ to make Ringer's solution preferable to plain physiologic solution of sodium chloride.

From the work on intestinal obstruction, the value of saline solutions is so well known that there is a definite tendency to use them for all administrations of intravenous fluids. In 1924 Matas⁷ pointed out that such a plan is not without serious drawbacks and dangers, degenerative changes in heart muscle and kidneys, and edema of the lungs being warned about in particular. To the alert observer, edema of the dependent portions of the body from the excessive use of salt solutions is not an uncommon observation in the surgical services. In 1933 Jones and Eaton⁸ presented a review of thirty-four cases in which edema was noted postoperatively. Twenty-one of the patients had diseases of the gastro-intestinal tract, the most common being peptic ulcers, gastric malignant growths and perforated appendixes. In most instances the edema was of the dependent portions of the body. Five patients, however, had edema of the lungs, and one patient died from edema of the intestinal wall with resultant partial obstruction. It was thought that the most important element in the production of the edema in these cases was a low serum protein consequent to undernutrition. Additional factors considered to be of importance were the administration of excessive amounts of fluid and salt, profuse surgical drainage, the general effects of sepsis, and loss of serum protein by massive hemorrhage. Corroboration of the influence of these factors on the production of edema was obtained by these authors and White⁹ in an interesting series of experiments on animals.

From observations over a period of several years on edema developing postoperatively, it was our impression that while many factors predisposed to the retention of fluids the precipitating factor was frequently the excessive use of sodium chloride solutions. Among other things, a study of the efficiency of the commonly used intravenous fluids in maintaining a normal water exchange offered a chance to substantiate this opinion.

METHOD

Three groups of sick surgical patients who could not or were not permitted to take anything by mouth and therefore needed fluids parenterally were selected for study. Each group received primarily 5 per cent dextrose in either physiologic solution of sodium chloride, in Ringer's solution or in distilled water. For one point of interest, a control group of patients in good general condition was studied. The fluid was given intravenously by the drip method at a rate of about 450 cc an hour, this being the method preferred rather than subcutaneous infusions. None of the patients gave evidence of renal disease or cardiac decompensation. The study was generally started on the first postoperative day. In several instances after the effect of one solution was determined the fluid intake was changed to a different solution, given either intravenously or by mouth.

The procedure for the determination of the water exchange of surgical patients has been described previously.² In brief, we obtained the weight of the patient each morning at 8 o'clock, and the weights of

³ Hartwell J. A., and Hoguet J. P. Experimental Intestinal Obstruction in Dogs, with Special Reference to Cause of Death and Treatment by Large Amounts of Normal Saline Solution. *J. A. M. A.* 50: 13 (July 13) 1912.

⁴ Orr T. G., and Haden R. L. Chemical Factors in Toxemia of Intestinal Obstruction. *J. A. M. A.* 91: 1529 (Nov. 17) 1928.

⁵ McIver M. A., and Gamble, J. L. Body Fluid Changes Due to Upper Intestinal Obstruction. *J. A. M. A.* 91: 1589 (Nov. 24) 1928.

⁶ Horsley J. S. The Intravenous Administration of Dextrose in Ringer's Solution. *Ann. Surg.* 100: 678 (Oct.) 1933.

⁷ Matas Rudolph. The Continued Intravenous Drip. *Ann. Surg.* 79: 643 (May) 1924.

⁸ Jones C. M., and Eaton F. B. Postoperative Nutritional Edema. *Arch. Surg.* 27: 159 (July) 1933.

⁹ Jones, C. M., Eaton F. B., and White J. C. Experimental Postoperative Edema. *Arch. Int. Med.* 53: 649 (May) 1934.

all intake and output for the next twenty-four hours. The water balance, including water vaporized from the lungs and skin, was then calculated for each day.

Blood chemistry studies considered to be desirable and carried out by standard methods were the total

serum proteins, serum albumin, carbon dioxide combining power, chlorides and nonprotein nitrogen. The excretion of chlorides in the urine also was determined.

In deciding whether the water exchange was satisfactory, the weight of the patient each morning was used

Summary of Data

General Condition of Patient	No	Weight Kg	Diagnosis Operation	Serum Proteins Gm per 100 Cc		Plasma CO ₂ Comb Power Volumes per Cent		Plasma Chlorides, Mg per 100 Cc.		Blood NPN Mg per 100 Cc.	Intravenous Fluid Daily Intake 5% Dextrose in Physiologic Solution	Change in Weight * Kg	Fluid Changed to Daily Intake	Change in Weight Kg
				Total	Albu min	Begin ning	End	Begin ning	End					
Sick Surgical Patients 5% Dextrose in Physiologic Sodium Chloride Solution	1	53	Carcinoma of esophagus gastrostomy	6.8	3.8	64	55	532	506	23.1	3,400 cc for 4 days	Gain 4.4	2,000 cc. diet by gastrostomy for 2 days	Loss 3.6
	2	52	Carcinoma of rectum colostomy	6.1	3.0	50		541		23.5	3,290 cc for 3 days	Gain 1.3	2,300 cc diet by mouth for 1 day	Loss 2.5
	3	57	Duodenal ulcer posterior gastro-enterostomy	5.1	3.4	66	62	406	474		3,700 cc for 4 days	Gain 7.2	3,700 cc. IV 5% dextrose in water for 5 days	Loss 6.7
	4	59	Duodenal ulcer posterior gastro-enterostomy	7.0	4.4	58		523	570		3,500 cc for 2 days	Gain 2.0	3,600 cc IV 5% dextrose in water for 4 days	Loss 4.9
	5	63	Duodenal ulcer posterior gastro-enterostomy	7.2	4.6	67		415	532	36.3	3,500 cc for 1 day	Gain 1.4	3,600 cc IV 5% dextrose in water for 3 days	Loss 2.9
	6	68	Acute infection of left elbow drainage	5.8	3.4	56		570		29.4	3,400 cc for 2 days	Gain 1.7	General diet for 2 days	Loss 1.4
Healthy Surgical Patients 5% Dextrose in Physiologic Sodium Chloride Solution	6	66	Healed infection of left elbow no operation	6.5	3.6	60		579			3,300 cc for 2 days	Loss 1.9		
	7	68	Inguinal hernia repair	6.5	3.8	57		589	565		3,400 cc. for 3 days	Loss 1.2		
	8	80	Peripheral vascular disease no operation	8.0	4.5			548	610		7,470 cc for 3 days	Loss 1.5		
	9	44	Recurrent appendicitis appendectomy			63	60	472	481		3,000 cc for 2 days	Loss 0.7		
Sick Surgical Patients 5% Dextrose in Ringer's Solution	10	60	Inguinal hernia repair			62	69	386	403		3,000 cc for 2 days	Loss 1.6		
	11	43	Carcinoma of colon resection	5.4	3.4	52	60	480	565	29.2	3,000 cc for 4 days	Gain 0.1		
	12	54	Fecal fistula closure	7.1	4.1	57	62	550	557	32.0	3,250 cc for 2 days	Loss 0.8	3,080 cc IV 5% dextrose in physiologic solution for 1 day	Gain 0.2
	13	54	Carcinoma of stomach resection	5.0	2.6	50	50	553	624	26.1	3,460 cc for 3 days	Gain 0.1	2,980 cc IV 5% dextrose in physiologic solution for 2 days	Gain 1.1
	14	83	Gastric ulcer exclusion operation	6.4	4.0	71	54	509	658	36.0	3,290 cc for 3 days	No change	3,060 cc IV 5% dextrose in physiologic solution for 3 days	Loss 0.8
	15	76	Carcinoma of stomach anterior gastro-enterostomy	6.4	3.4	76	56	374	554	26.9	3,155 cc for 2 days	Gain 1.3	3,450 cc IV 5% dextrose in physiologic solution for 2 days	Gain 1.7
	16	76	Cholecystitis diabetes mellitus cholecystectomy	6.2	3.4	33	50	582	609	20.4	3,050 cc for 4 days	Gain 3.0	Routine diabetic diet for 2 days	Loss 3.4
Sick Surgical Patients 5% Dextrose in Water	17	51	Chronic empyema open drainage	6.0	3.1	58	62	554	604	31.1	3,030 cc. for 3 days	Gain 3.4	General diet for 2 days	Loss 2.6
	18	50	Carcinoma of stomach resection	6.6	2.7	63	57	518	511		5% Dextrose in Water 3,450 cc for 6 days	Loss 3.7	2,700 cc. diet by mouth for 1 day	Loss 0.7
	19	29	Appendicitis with peritonitis no operation								3,293 cc for 10 days	Loss 2.3		
	20	42	Incarcerated inguinal hernia repair			47	58	433	433		2,515 cc for 2 days	Loss 1.0		
	21	53	Gastric ulcer excision of ulcer	6.0	3.9	54	55	518	497	24.6	3,334 cc for 5 days	Loss 3.3	2,583 cc diet by mouth for 2 days	Loss 1.1

* Change in weight of patient was used as a simple criterion of water exchange. Since the caloric intake was below maintenance requirements a daily loss in weight should have occurred as a result of the oxidation of body substance for additional energy. A gain in weight or even a maintenance of body weight under these circumstances meant water retention.

as a simple criterion. In health an adult's weight is fairly constant, showing only minor variations from day to day as a result of water being retained or given up. The patients studied took no food by mouth and were undernourished. They received about 175 Gm of dextrose daily in the intravenous fluid, but its calorific value was always less than the energy requirements and consequently some body glycogen, fat and protein were burned for additional energy. With the loss of these food substances and the water held by them, a daily loss in weight should occur, amounting to roughly 400 to 600 Gm for an adult. A gain in weight or even a maintenance of body weight under such circumstances meant retention of water. Since the patients studied were not dehydrated, this addition of water would be an undesirable feature and indicative of a disturbed water balance. If great enough, clinical edema would appear.

RESULTS

The data for the twenty-one patients studied are shown in the accompanying table. The values given for the serum proteins were those obtained at the start of the study.

COMMENT

An investigation of this type is more complex than it appears to be at first glance, and many points of interest arise, particularly in relation to body chemistry. Comments have been largely limited, however, to facts significant to the purpose of this paper.

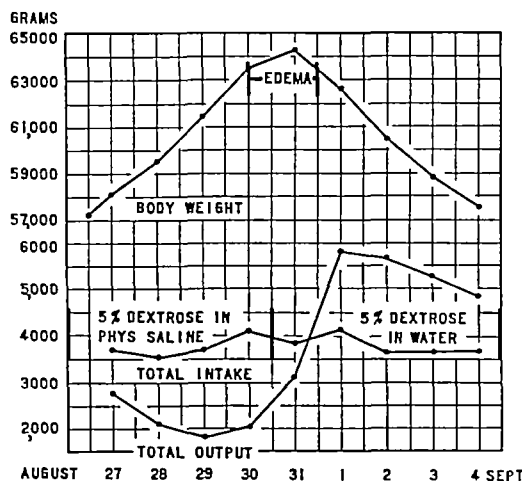
1 Patients Receiving 5 per Cent Dextrose in Physiologic Solution of Sodium Chloride—All the sick surgical patients in this series retained water and gained weight, one of them, patient 3, developing definite edema of the lower part of the back and ankles. The first five of them had diseases of the gastro-intestinal tract and presented various degrees of undernutrition. No clear correlation was found, however, between their serum protein and the retention of water. The critical level for total serum protein at which edema begins to develop is given by Moore and Van Slyke¹⁰ as 5.5 ± 0.3 Gm per hundred cubic centimeters, for serum albumin, 2.5 ± 0.2 Gm per hundred cubic centimeters. In relation to edema the serum albumin is considered to be more significant than the total serum protein. None of the patients of this first group had serum albumin values down to the critical level, this probably accounting for the lack of correlation between this value and the retention of water, as found by other observers.¹¹

To substantiate our impression that the general condition of being sick had a great deal to do with the water retention when salt solution was given, the group of surgical patients whose general condition was excellent was included here. Patient 6 retained water and gained weight when given the 5 per cent dextrose in physiologic solution of sodium chloride during the period of his acute infection. Three weeks later, when the drained area was healed, no water was retained under otherwise the same circumstances. Patients 7, 9 and 10 were convalescing uneventfully from major operations and to all intents and purposes could be regarded as healthy. Patient 8 was being treated for a chronic peripheral vascular deficiency, but his general condition was excellent. None of these four patients retained

water when given 5 per cent dextrose in physiologic solution of sodium chloride for two or three days. Salt solution did not disturb their water exchange.

The water balance of the sick patients receiving 5 per cent dextrose in physiologic solution of sodium chloride was not satisfactory. Water was retained when it was not needed. On the basis of the beginning plasma carbon dioxide combining power and chloride values there was no indication for giving the saline solution to them. Per se there was no evidence that the water retention produced did any harm to the patients studied, but the common observation of waterlogged tissues of surgical patients coming to autopsy may well be the result of such indiscriminate use of physiologic solution of sodium chloride. In our subjects the kidneys, at least, were called on for the additional work of excreting many grams of excess sodium chloride.

The data from this first group corroborated our opinion from clinical observations that when edema develops in sick surgical patients receiving intravenous fluids it can be stopped in the majority of instances by stopping the administration of sodium chloride. There is no need for the limitation of fluid intake or the use of diuretics. The importance of simply eliminating the



Demonstration in case 3 postoperative gastro-enterostomy of the production of edema with the administration of 5 per cent dextrose in a saline solution intravenously and the subsequent disappearance of the edema when the sodium chloride was omitted.

salt element was well shown in patients 3, 4 and 5, who, when the change was made to approximately 3,500 cc daily of 5 per cent dextrose in distilled water, promptly gave up their retained water and lost weight. This was so dramatic for patient 3 as to be worthy of graphic representation in the chart.

2 Patients Receiving 5 per Cent Dextrose in Ringer's Solution—The second group of sick surgical patients was given from 3,000 to 3,500 cc. of 5 per cent dextrose in Ringer's solution daily. Of the seven patients so treated six retained water, two gaining more than 3 Kg. The one patient who lost weight when given Ringer's solution plus dextrose had the highest serum protein and serum albumin in the group. His response approximated that of a healthy person.

A comparison of the data from the two groups of sick patients receiving salt solution showed that there was a tendency for a little greater retention of water when physiologic solution of sodium chloride plus dextrose was given than when Ringer's solution plus dextrose was used. Several points substantiated this

¹⁰ Moore N. S. and Van Slyke D. D. The Relationships Between Plasma Specific Gravity, Plasma Protein Content and Edema in Nephritis. *J. Clin. Investigation* 8: 337 (April) 1930.

¹¹ Jones and Eaton. ¹² Jones, Eaton and White. ¹³ Moore and Van Slyke.

impression in spite of the fact that the effects of various factors predisposing to edema were probably not exactly equal in the two groups. In general, the amount of water retained was somewhat greater for the group of patients receiving physiologic solution of sodium chloride plus dextrose. Then patients 13 and 15 gained a little more weight when the intravenous fluid was changed from Ringer's solution plus dextrose to physiologic solution of sodium chloride plus dextrose. Patient 13 also had the lowest serum protein and serum albumin in the series, the values shown being well within the critical level at which edema tends to develop, yet with 5 per cent dextrose in Ringer's solution for three days the weight gain was only 100 Gm. From the standpoint of water exchange there is apparently some advantage in the use of Ringer's solution over that of physiologic solution of sodium chloride, but it is well to point out again that six of the seven patients to whom the Ringer's solution was given retained water. Its use does not obviate the occurrence of edema.

Concerning the blood chemistry, the adjustments of plasma carbon dioxide combining power and chlorides were entirely satisfactory with the Ringer's solution.

3 Patients Receiving 5 per Cent Dextrose in Water

—The four sick patients of this group did not retain water. For each of them a decrease in weight occurred as a result of the oxidation of body glycogen, fat and protein for energy, both these materials and the water normally held by them being lost. The water exchange was the same as if no food had been eaten and the dextrose solution had been taken by mouth.

Patient 18 was particularly interesting in that, although the serum protein and serum albumin were down to the critical level for the development of edema, no water was retained in spite of a good intake of fluids intravenously for six days.

That there need be no concern for the sodium chloride content of body fluids if salt is not being lost through abnormal channels and only water and dextrose is given intravenously was shown by the plasma carbon dioxide combining power and chloride values for patients 18 and 21 being practically the same at the end of the period of study as at the beginning. The chemical economy of the body under such circumstances was apparent when the excretion of chlorides in the urine was reduced to less than a gram daily.

SUMMARY

In many conditions associated with disease, the parenteral administration of fluids has proved to be of great value. While some difference of opinion exists as to the choice of fluids to be given, the proposition is that of supplying as nearly as possible what the patient needs. Water is generally of first importance and, since all patients unable to take water by mouth are also short on food, some dextrose is needed. Whether this is administered in distilled water or in a saline solution is the important point.

From the observations of a number of investigators, the value of saline solutions for patients who have lost sodium chloride has been well established. A distinct tendency exists, however, for the use of these solutions as a routine for all parenteral fluid administrations, without regard to whether sodium chloride is needed or not. Warnings have been given concerning the development of edema with such a procedure. From our experience and that of others the occurrence of edema in surgical patients receiving parenteral fluids is not

uncommon. Many factors such as undernutrition, the excessive administration of water and salt, and the general effects of sepsis have been presented as setting the background for the retention of water. These factors are commonly found in the sick surgical patient and it has been our impression that while they are important, the precipitating factor is generally the excessive use of sodium chloride. To corroborate this opinion a study was made of the water exchange of a group of sick surgical patients, who were given the commonly used intravenous fluids as a part of their necessary postoperative care.

It was found that twelve of the thirteen sick surgical patients receiving 5 per cent dextrose in physiologic solution of sodium chloride or Ringer's solution retained water and gained weight. The amount of water held was a little less with Ringer's solution than with the physiologic solution of sodium chloride. When administration of the salt solution was stopped and fluids were taken by mouth or changed to 5 per cent dextrose in distilled water intravenously, all of the group promptly lost the water previously retained. This last point is worthy of special emphasis. It was not necessary to stop the administration of intravenous fluids to get rid of the water retention or to use diuretics, when the sodium chloride was omitted, the edema fluid disappeared even with a good water intake.

No water was retained by a group of sick surgical patients given 5 per cent dextrose in distilled water, their daily exchange being approximately the same as if the solution had been taken by mouth. A loss of weight occurred, but this could be accounted for by the loss of body tissue oxidized for energy. One in the series, patient 18, had a total serum protein and serum albumin value down to the critical level at which edema tends to develop. From our experience, water would most surely have been held if a sodium chloride solution had been used, but with the daily administration of 3,450 cc of 5 per cent dextrose in water for six days no retention occurred. Throughout the whole study the suitability of this solution for maintaining a normal water exchange was apparent.

Warnings about the production of edema with salt solutions are well founded and should be heeded. While actual edema was noted in only one of our patients, several of them were well on the way to developing it and would have done so if the salt had not been stopped. The only reason that gross water retention is not seen more frequently with the indiscriminate use of saline solutions is that it is generally not given for more than two or three days. The first thought of the surgeon on finding edema in a sick patient who has been receiving fluids parenterally should be "How much salt solution has been given?" Often little is required to cause water retention. We have seen several instances in which a liter a day for a week or so to a seriously ill patient was enough to produce edema of the lower part of the back and the ankles. When parenteral fluids are necessary, the thoughtful physician will avoid these errors by supplying the amount and kind of materials needed.

CONCLUSIONS

- 1 Retention of water is a frequent occurrence when saline solutions are given intravenously to sick surgical patients. Edema from this cause is not uncommon if the solutions are given for more than a few days.
- 2 Five per cent dextrose in distilled water intravenously provides for a normal water exchange.

ABSTRACT OF DISCUSSION

DR. THOMAS G ORR, Kansas City, Mo It is refreshing in this age of physiologic and biochemical surgery to hear a practical paper that is not operative. Unquestionably many lives have been saved by the recognition and proper treatment of patients suffering from dehydration, chemical imbalance and metabolic imbalance. The authors have shown how one can estimate the water needs of the patient. I was especially impressed by their figures estimating the needs of the patient in the first twenty-four hours. The ordinary daily intake plus 6 per cent of the body weight is an excellent working basis, easily estimated in any particular case. This is a practical means of treating patients who come in with very definite dehydration which can be easily determined by the general clinical appearance of the patients and by blood chemistry. Hypertonic solutions have been too much in vogue among many surgeons in recent years. Hypertonic solutions have a definite use but it is rather limited. The indications are not many. For a patient coming in with a marked hypochloremia after persistent vomiting, a hypertonic salt solution perhaps only one dose is indicated, but certainly that should not be overdone. The same applies to dextrose. I find that in certain places they are giving 50 per cent dextrose with the idea of feeding the patient. It is my impression that they are dehydrating him. This should not be done except in certain injuries to the brain. The authors have spoken of other dangers, notably those to the heart and the kidney, and of edema. Certainly that should be taken very much to heart. An overdose of sodium chloride will unquestionably produce edema and injure the circulatory apparatus. All therapeutic methods are overdone when first introduced until the proper evaluation has become established. Another danger is that of embolism and thrombosis following prolonged intravenous administration. Such an important treatment as intravenous therapy cannot be discontinued because there may be an occasional accident of that type but it is well to keep it in mind. Nature never intended that we should be fed and watered by the vein. Patients should not be treated by this method any longer than is absolutely necessary. The way to give food and drink is by mouth, and that should be controlled so far as possible. Every surgeon should study this paper carefully for by such study he will become a better surgeon and will save more lives.

DR. WALTER G MADDOCK, Ann Arbor Mich The authors have shown that approximately 3,500 cc of fluid is needed daily by the sick patient to provide water for vaporization and a good urine output. If abnormal losses of fluid due to vomiting take place, the 3,500 cc. amount is not sufficient. There are several causes of anuria, but dehydration often resulting from abnormal losses of fluid is the most common one and can be readily detected by a check-up and the finding of a negative water balance for several days previous to the insufficient urine output. In dealing with the dehydrated patient an extra amount must be given to restore the fluid previously lost, besides providing water for vaporization and urine. A study of dehydrated subjects showed that the common signs of this condition are readily recognizable when the body has lost an amount of fluid equal to about 6 per cent of the body weight. This figure can be used in calculating the additional amount of water to be given to a dehydrated patient. The total water calculation for such a patient weighing 60 Kg. would then be for vaporization 2,000 cc., for urine 1,500 cc., to relieve the dehydration (6 per cent of 60 Kg.) 3,600 cc. = a total of 7,100 cc. Studies of several dehydrated patients have shown that such volumes are first necessary to provide for a good urinary output. The authors have presented evidence to show that retention of water is of common occurrence if saline solutions are given indiscriminately to sick surgical patients. That such solutions are not generally needed was shown when an analysis of the reasons for giving fluids intravenously to 100 general surgical patients showed that only 20 per cent of them had lost appreciable amounts of sodium chloride chiefly by vomiting and needed some salt. The remaining 80 per cent had not lost sodium chloride but because of their disease or because of the treatment, could not or were not permitted to take in sufficient fluids by mouth to maintain a normal water exchange. What they required was sufficient water to provide for vaporization

and a good urinary output, and enough dextrose to prevent ketosis. This can be well supplied by 5 per cent dextrose in water. The whole subject of water balance forms an important part of preoperative and postoperative care. Its skilful handling, with due consideration to both the amount and the kind of fluid, will yield very gratifying results.

THE CONSERVATIVE TREATMENT
OF ABORTION

JAMES R. REINBERGER, M.D.

AND

PERCY B. RUSSELL, JR., M.D.

MEMPHIS, TENN.

The better method of treatment of abortion is still a controversial question. This lack of accord contributes its share to the one third of all obstetric deaths resulting from abortion. In the obstetric service from 1933 through 1935, since the majority of deaths followed infection from criminal abortion, it was apparent that criminal induction bore a definite relationship to the death rate. Criminal abortion is definitely on the increase, for criminal induction was admitted in 17 per cent of the 707 cases studied. It is safe to assume that an additional 10 per cent may be added conservatively (table 1).

TABLE 1—Analysis of Methods of Criminal Abortion 1933-1935

Spontaneous	590 or 83%
Induced	117 or 17%
Total	707
Medical	26
Instrumentation	91
Doctor	29
Catheter	10
Pack	4
Dilation and curettage	10
Instrument	56
Self	23
Catheter	3
Pack	30
Midwife	6
Catheter	4
Pack	2
Total	117

Self instrumentation superseded those abortions induced by physicians. Use of the catheter and instrumentation were the most common methods employed and were done mainly by white patients. Self instrumentation demonstrates that the seriousness of this procedure is not generally appreciated. It is apparent that the Negro is ignorant of the possibilities of doing away with unwanted pregnancies, but future enlightenment will increase the number of abortions tenfold. Because of criminal induction, the death rate was twice as great for the white, even though the Negroes outnumbered the white patients.

Criminal induction was the most determined cause of two thirds of the total number of deaths in which two thirds of these resulted from infection. It is evident that the major barrier was the control of infection.

Experience demonstrates that a definite history of criminal invasion of the uterus was not often obtained until after many days of hospitalization. The unreliability as to whether criminal invasion had been done with the certainty of infection, plus the large number

From the Department of Obstetrics, University of Tennessee College of Medicine and from the John Gaston Memorial Hospital.
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of patients admitting criminal induction, made it imperative that all measures to prevent any possible dissemination should be carried out by nonintervention.

The classification of abortions is self explanatory. The discrimination between febrile and afebrile abortions deserves discussion. The presence of fever does not necessarily indicate whether virulent organisms have been introduced and if so to what extent the

TABLE 2—Classification of Abortions

1	Spontaneous	Onset without apparent cause
2	Induced	History of abortifacient or instrumentation
3	Complete	Definite history of pregnancy with passage of products of conception. No evidence of uterine activity or bleeding
4	Incomplete	Definite history of pregnancy with passage of some part of the products of conception. Evidence of uterine activity and bleeding
5	Febrile	Elevation of temperature on admission with or without active signs of infection
6	Afebrile	No elevation of temperature or active signs of infection on admission
7	The presence of fever on admission rather than later as a guide seems more logical for classification particularly for those who invade the uterus as a routine	
8	Late septic	History of abortion with considerable lapse of time before admission to the hospital. Evidence of blood loss or the presence of extra uterine infection such as parametritis, thrombophlebitis, peritonitis and bacteremia

infection has spread. Febrile cases may result from the absorption of degenerative fetal products, while in afebrile cases there may be virulent organisms harbored in the uterus. Elevation of temperature on admission was found to be the best guide as to the presence of infection. Its presence does not have any bearing on our conservative management, but it should be used advantageously by those who actively invade the uterus as a routine.

The question of race, antepartum attention, parity and duration of pregnancy had no effect on the response to therapy. There were many more nonclinic patients than clinic ones. Abortion was more common in the

TABLE 3—Statistics of Deliveries and Abortions at John Gaston Memorial Hospital

1	Total number of deliveries (1933-1935)	6,061
2	Total number of abortions (1933-1935)	707
3	Ratio % to 1 Total	7.888

Analysis of 707 Abortions in Relation to	Number	Per Cent
Race		
White	254	36
Colored	453	64
Clinic	129	18
Nonclinic	578	82
Parity		
Primipara	180	26
Multipara	522	74
Duration of pregnancy		
First trimester	407	58
Second trimester	300	42
Wassermann reaction		
Positive	142	20
Negative	427	60
Not reported	138	20
Anemias less 3,500,000		
Positive	215	31
Negative	425	60
Not reported	67	9

multipara. The duration of pregnancy was equally divided. Syphilis played a small part as an etiologic factor in second trimester abortions. Anemia was present in a considerable number of cases but probably had no bearing. It is even questionable whether or not the anemia resulted from the abortion or was present prior to the pregnancy (table 3).

A considerable number of patients had completely aborted with cessation of uterine cramps and bleeding

before admission and required no treatment. A still greater number of abortions had completely separated the products of conception from the uterus and presented only the slightest evidence of uterine activity with slight bleeding. A very small number presented evidence of partial separation of the products of conception with continued bleeding.

It was observed that the simple retention of the separated products of conception in the lower uterine segment rarely caused any moderate and never profuse hemorrhage. The administration of oxytocics almost invariably brought about the expulsion of such products. It is true that the experienced operator may possibly remove such products from the lower uterine segment with little or no harm, but the teaching of interns has demonstrated to us that, unless close supervision of this procedure was carried out, more often complete exploration of the uterus was done.

Therefore it follows that, since many of the abortions are completed and require no treatment and that even a greater number of incomplete abortions

TABLE 4—Treatment

1	Preparation of vulva. Vaginal speculum was introduced only in cases of moderate or profuse hemorrhage. The lower uterine segment was not invaded. Tissue protruding through cervix was removed with sponge stick.
2	Blood transfusion was given immediately on admission for massive blood loss. It was used rather frequently in others to maintain resistance against infection.
3	Elevation of the head of the bed to promote drainage.
4	Icebag to lower part of abdomen to promote contractility of uterus.
5	Fluidextract of ergot, 30 minims (2 cc.) every four hours for the complete type.
6	Solution of posterior pituitary from 0.5 to 1 cc. every four hours for incomplete type with slight bleeding. Fluidextract of ergot, 30 minims (2 cc.) every four hours after passage of products of conception.
7	Solution of posterior pituitary, 1 cc. every hour for moderate or profuse bleeding for incomplete type until products of conception have passed, followed by fluidextract of ergot 30 minims (2 cc.) every four hours for four days.
8	Invasion of the uterus rarely necessary, done only following the failure of oxytocics.
9	In a small number of cases continued bleeding necessitated the use of sponge stick, curet or pack.

responded to oxytocics, the routine invasion of the uterus was not only unnecessary but inadvisable and was never done until oxytocics had failed.

Continued bleeding after the cessation of uterine cramps indicated that some of the products of conception had not been expelled. A small fragment of placental tissue adherent to the uterine wall was encountered in a small group of cases. Oxytocics proved of little value. Operative intervention was indicated. A study of such cases with their sporadic occurrences signified that overenthusiasm rather than actual clinical and blood signs was often responsible for active invasion of the uterus. In a small group of cases of continued bleeding, active invasion failed to reveal the presence of placental tissue. This suggested that infection of the uterus wall was responsible for the bleeding. Violent manipulation and sharp instrumentation was never used for fear of perforation. A sponge stick or dull curet was used for exploration in such cases.

It was thought that second trimester abortions would give considerable trouble when the conservative plan of management was introduced as a routine. However, end results indicate that this belief was based on a false premise, for in only two such cases was operative intervention necessary. We adopted this conservative type of treatment in this group of cases based on our

experience with the handling of retained or adherent placenta complicating full time labors. Experience demonstrated that in the majority of cases the placenta was almost invariably expelled without active invasion of the uterus. The good results of this procedure in full term labors was again substantiated in the management of second trimester abortions.

It did not matter whether the uterus was emptied when once infection had extended beyond the uterus. It was generally accepted that no active intra-uterine manipulation should be carried out but that all efforts should be directed toward building up the patient's general resistance. The deaths in this series indicated that almost a fatalistic attitude must be assumed, for with the exception of an occasional case of blood stream or parametrial infection practically all patients died. The active treatment to combat thrombophlebitis and general peritonitis seemed almost hopeless. Sufficient evidence gained elsewhere indicated that ligation in thrombophlebitis and drainage in peritonitis were practically of no value.

There is no doubt that the postponement of medical care, too late to establish localization, was found to be more dangerous than the presence of infection. The

An immediate inventory of the patient's general condition was as important as the information whether or not the uterus was emptied. Immediate blood transfusion saved many patients from almost complete exsanguination while in others it fortified body resistance sufficient to overcome infection.

Transfusions were performed 148 times in 707 cases. The number of transfusions was certainly not out of

TABLE 6—Comparative Analysis

	Final Results in Relation to				Total 707
	No. 124 Com- plete Afebrile	No. 83 Com- plete Febrile	No. 422 Incom- plete Afebrile	No. 96 Incom- plete Febrile	
Spontaneous	107	40	37	74	90
Induced	22	2	40	22	11
Average days in hospital	6	8	7	6	7
Average days morbidity	1	2	2	4	2 11/12
Treatment					
Conservative	124	6	40	91	680
Operative	0	0	1	7	15
Average hours for uterus to empty	0	0	1	18	12 1/2
Transfusions	18	10	80	34	148
Results					
Lived	12	6	421	91	668
Died	1	2	1	5	9

TABLE 5—Analysis of Operations 1933-1935

Complete abortion	180	or 25%				
Incomplete	518	or 73%				
Febrile abortion	161	or 24%				
Afebrile abortion	46	or 7%				
Total	698					
Incomplete Abortions	Number	D & C	Pack	Manual Removal	Bag	Total
1933	140	4	0	1	0	5
1934	178	3	1	0	0	4
1935	181	2	4	2	1	9
		9	5	3	1	18

18 operations performed in 518 incomplete abortions or 3.5%

necessity of immediate conservative treatment with its good results was substantiated in contrast to the eight of the nine patients who died presenting evidence of extra uterine infection on admission to the hospital.

One hundred and eighty-nine of the abortions were completed and 518 were incomplete prior to admission. One hundred and sixty-one of the total number of abortions were febrile while 545 were afebrile. The incidence of operation was comparatively small for only eighteen operations were performed in the 518 incomplete abortions. Dilation and curettage accounted for 50 per cent of all operations and were done for prolonged bleeding following the failure of oxytocics. Uterine packing was occasionally employed and only after instrumentation had failed to reveal retained tissue. Manual removal used only in three cases demonstrated that immature placenta caused very little trouble (table 5).

Morbidity and hospitalization were considered by many to be an indication for routine emptying of the uterus. The average number of days for morbidity of the entire group of cases was two and eleven twelfths. The morbidity was slightly larger in febrile cases. The average number of hours necessary for oxytocics to empty the uterus was twelve and one half. The average number of hospital days for all cases was seven.

The seriousness of the abortion problem submerges the question of morbidity and hospitalization and demands a plan of treatment that results in the smallest number of deaths.

proportion, for only 148 were given to 215 patients who had less than 3 500 000 red blood cells (tables 3 and 6).

The analysis of deaths reflected that the method of treatment of emptying the uterus played no part. The three patients who died within the first twenty-four hours were immediately dismissed from the discussion. The second group of so-called late septic abortions were likewise completed and had no bearing on active invasion or conservatism. All these patients presented extra-uterine extension of infection.

There remains only three cases for discussion that would actually come within the realm of this subject.

TABLE 7—Analysis of Deaths 1933-1935

1 Cases not associated with hospitalization	3
(a) Postabortal complete estivo-autumnal death in two hour	
(b) Postabortal complete criminal three weeks exsanguinated died five hours after admission	
(c) Postabortal complete criminal general peritonitis died in sixteen hours after admission	
2 Late septic cases from 3 to 8 weeks after abortion	9
(a) Complete criminal three weeks died of peritonitis on fifteenth day	
(b) Complete criminal three weeks pelvic thrombophlebitis positive blood culture nonhemolytic streptococcus autopsy pyemia lung abscess died fourteenth day	
(c) Complete spontaneous eight weeks thrombophlebitis continued bleeding dilation and curettage died fourteenth week questionable surgical judgment	
3 Cases admitted within five days after induction	9
(a) Incomplete abortion criminal two day conservative treatment uterus emptied in ten hours died of peritonitis ninth day	
(b) Complete criminal four days blood cultures anaerobic streptococcus died of peritonitis on fourth day admitted with peritonitis	
(c) Complete criminal four days exsanguinated admitted with peritonitis died tenth day	

One of these cases was admitted four days after complete abortion. Death occurred from peritonitis on the fourth day of hospitalization. A second patient was admitted exsanguinated four days after complete abortion and had a transfusion but died from peritonitis on the tenth day. The third case was an incomplete abortion. The uterus was emptied by oxytocics within ten hours. The patient died from peritonitis on the ninth day.

In the final analysis, it is apparent that only one of the deaths could be associated with the question of intervention or nonintervention, for the remaining cases were admitted with no evidence of retention of the products of conception.

It seems that the major problem, at least in this group of cases, is not a question of intervention or nonintervention. It is felt that delayed hospitalization for immediate effective therapy was the factor that must be emphasized because of the low death rate associated with early treatment of abortion. Just what can be done about this delay is hard to state. Economic distress and the attempt to shield the presence of an unwanted pregnancy as a reason for delayed hospitalization will always remain the same problem.

CONCLUSIONS

Deaths resulting from abortions constitute the large proportion of the total maternal mortality. The number of criminal abortions is increasing. It is imperative that more conservative treatment be employed for controlling hemorrhage and for combating infection. Under the plan of nonintervention, which has been in use for three years, invasion of the uterus was rarely necessary for control of hemorrhage and was never used to combat infection. Blood transfusions proved

TABLE 8—Summary of Results of 707 Abortions 1933-1935

Complete abortion	189
Incomplete abortion	518
Conservative treatment	689
Operation performed	18
Average days in hospital morbidity	2 ¹¹ / ₁₂
Average days of hospitalization	7
Deaths in series	9
Deaths not associated with hospitalization	3
Deaths in admissions 3 to 8 weeks after abortion but not associated with therapy	3
Deaths in admissions within 5 days with peritonitis	2
Deaths associated with conservative treatment	1

their value for checking infection and for restoring blood volume. Records of a series of cases emphasized the infrequent need for operative intervention and the low mortality. The seriousness of the abortion problem submerged the question of morbidity and days of hospitalization. It is believed that conservative treatment should be more universally employed in an effort to reduce the number of deaths from abortion.

1045 Madison Avenue

ABSTRACT OF DISCUSSION

DR J. C. LITZENBERG, Minneapolis. I was impressed with the fact that the authors could give such a remarkable report from a community, largely colored, where hygienic surroundings are poor. My mind reverted back twenty-nine years when a commission appointed by the American Medical Association to investigate the treatment of puerperal sepsis (including septic abortion) reported its recommendations, among which was the condemnation of all such cases. The recommendation of active treatment illustrates how long it takes to instil into the medical profession principles which have been established by experts. That was twenty-nine years ago this month and yet there are few hospitals that can give the statistics that the authors have revealed today. They reported only one death, and intervention was almost eliminated. Criminal abortions are greatly on the increase. Thousands of mothers are losing their lives through improper treatment of septic abortion. Dr. Fred Taussig states that there are performed at least 700,000 cases of criminal abortion annually in this country. The birth rate is decreasing alarmingly. Therefore it is up to us as a profession to save all the conceptions that do occur so that we may maintain our population. It may astonish some to know that we have already reached in the United States a birth rate

which is barely capable of maintaining our population. When our population begins to decrease, perhaps we shall be awakened to the fact that a decreasing population means a degenerating civilization. That is what happened to Rome and Carthage. Perhaps we cannot do much about lessening the number of criminal abortions, perhaps we cannot do much about increasing conceptions, but we as a profession can do a great deal by conserving all the conceptions possible that do occur and by conservative handling save for future child bearing these mothers who are threatened by death on account of septic abortions. It is rather discouraging to hear the authors speak about those who intervene. Twenty-nine years ago the commission deprecated such intervention, well supported by statistics and by a long-time investigation, and yet we all know that intervention by curettage is the method of treatment in too many hospitals. The paper of Drs. Reinberger and Russell puts a new emphasis on the necessity of conservative treatment of abortions.

DR. THOMAS K. BROWN, St. Louis. In a series of 500 consecutive abortions treated at St. Louis City Hospital active treatment was employed. The therapeutic principle involved is drainage of a wound site which is found to be contaminated in 60 per cent of the cases. The bacteriologic studies in these cases have been helpful in showing the probable source of such contamination, the vaginal tract. Soule and I have previously reported anaerobic growth in 60 per cent of vaginal cultures on patients in the obstetric clinic. In the present series the cases with positive intra-uterine cultures, 60 per cent, showed the incidence of anaerobic organisms to be 92 per cent. As to questions of permanent damage to the pelvic organs and future sterility, both of which have frequently been observed in such cases, I wish to state that subsequent to early active treatment, pelvic examination reveals the presence of no residual pathologic condition and further pregnancies promptly occur if no contraceptive measures are used. No prolonged period of convalescence is noted. As to deaths occurring in the two series, one finds that in each group the patients were virtually moribund on admission, were under observation for a relatively short period, and made little or no response to any type of therapy used. The average period of hospitalization after active treatment was 6.3 days. By early active treatment, bleeding has been promptly arrested and the need for blood transfusions has been considerably reduced. By active treatment is meant gentle evacuation of the uterine cavity by means of a Forester sponge holding forceps. No curettage is done. Because of the close parallelism in the two sets of results and the absence of evidence of any real damage being done in a series of 500 cases treated by junior interns under proper supervision, it seems to offer further support to the policy of active treatment. In the final analysis what more have Drs. Reinberger and Russell accomplished than to attempt to obtain evacuation of the uterus by medical rather than by mechanical means? When failing in the former method, they resorted to the latter. In view of the similarity in results obtained in these two series, it seems logical to attempt to bring the disease process to a more abrupt termination by ending it mechanically and to avoid the period of watchful waiting during which time a localized process may become more widespread.

DR. RUDOLPH W. HOLMES, Chicago. I have had a rather unusual experience with abortions, particularly criminal. In 1898 I was appointed chairman of the Committee on Abortion of the Chicago Medical Society and thereby was accredited to the coroner's office and for five or six years was a deputy coroner. As a result of our investigations the committee concluded that for every baby born alive in Chicago in that day about 30,000 to 32,000, one baby was destroyed by a criminal operation. Our conclusion was that criminal abortions destroyed as many fetuses as did all other causes of early interruptions of pregnancy. Our committee was responsible for more apprehensions of culprits and their convictions than had obtained for many years previously. Repeatedly, we found on post-mortem examination that the uteri were perforated at times there was strong presumptive evidence that the perforations were sequential to the secondary operation, and in others the evidences were conclusive that they were the result of the unwise and contraindicated curettages. Such intra-uterine instrumentations frequently convinced the coroner's staff that

holding the abortionist to the grand jury was futile, as any jury would be convinced as we were that the attending physician had greatly contributed to the death of the woman. In former times it was quite the vogue to curet as a routine before hysterectomy as part of the operative toilet in my own practice and in that of Dr Thomas Watkins, we never found more than half the uterus touched by the curet. I state this to show how futile is the attempt to curet the uterus for sepsis. Further, most have forgotten the reaction zone of Bumm, which is tantamount to making the infected uterus an abscess cavity. Who teaches the curettage of an abscess wall? Dr Barrett is correct. In the presence of severe hemorrhage do a digital curettage but use no instruments. A well placed tampon in appropriate cases is good if there is slow bleeding. The teaching of Drs Reinberger and Russell should be given heed. Conservative methods will give better results than operations.

Dr. W. T. PRIDE, Memphis, Tenn. Dr Barrett must have been mistaken in his interpretation of the cases when he complained about not curetting in all and the transfusions. In my service the patients in whom transfusion is done come in almost exsanguinated, they are in bad condition and it wouldn't matter whether the contents of the uterus were still there, they would need the transfusion just the same. I deal with a class of people whose circumstances are different, and when you say 140 transfusions it seems like a great deal, and yet with 700 patients of that type it is not a great number of transfusions. One remark was made with which I do not agree and that is the advisability of irrigating an infected uterus. I do not irrigate. Dr Barrett brought up the question that if these nine who died had been curetted maybe they would be here, but how about all of those who wouldn't be here if they had been curetted? For the past three years I have treated all these cases conservatively and I leave to you the results.

Dr. JOSEPH B. DE LEE, Chicago. I had the honor to be the chairman of the committee to which Dr Litzenberg referred in 1905 or 1906. The committee was appointed for the study of the treatment of puerperal infection. In those days the treatment of puerperal infection was wash, curet brush, sponge and do everything one shouldn't do. Williams was on the committee, Litzenberg and one other. We communicated with every professor of obstetrics in the United States and every assistant professor and many abroad, and we combed the literature at home and abroad, and the report the committee brought in was that the conservative treatment of puerperal infection including abortions was the best. There is no difference of opinion between the two sides that have been taken here this afternoon. They both agree that the uterus ought to be emptied, but how—medically or surgically? It will be noticed that the surgeons are treating infection much more conservatively than they used to with a great deal less cutting. For septic abortion, medical treatment is what I recommend. Quinine 3 grains (0.2 Gm) every hour for five doses if the patient can stand quinine, followed by solution of posterior pituitary. Most of the cases will terminate themselves. If the woman has a high fever and she bleeds too much, a transfusion and a packing of the vagina are in order, after removal by gentle traction of pieces of the placenta sticking out of the cervix. There is no invasion of the uterus, packing of the vagina temporarily, trying to tide the woman over until her local and general immunities have been developed. That is the essence of the treatment that I have found the most successful. I watch the literature very closely, reading articles defending both sides of this moot question and I believe that in world literature of today the balance is in favor of conservative treatment.

Dr. LYLE G. MCNEILE, Los Angeles. Ordinarily it is not within the province of the chairman to discuss a paper but I think that the subject merits a wider discussion. I was trained by Dr De Lee and then I went to the Los Angeles General Hospital where the treatment of abortions was in the hands of those who called themselves gynecologists. They scraped every uterus well and faithfully. After five years I was able to remove the abortions to the obstetric department. Then the abortions came under the conservative treatment. We reduced our mortality at least 75 per cent by going from this curet method to the same general trends that Dr De Lee has mentioned and Drs Reinberger and Russell discussed in their paper.

We have been on that regimen for the last twenty years and we are going to continue the conservative treatment, which is, I think, the same treatment in infected abortions.

Dr. JAMES R. REINBERGER, Memphis, Tenn. I prefaced the presentation of slides with the remark "the better treatment of abortion is still a controversial question." I believe that the discussion has borne out this statement. The consistent number of deaths from abortion, not only in our hospital but throughout the entire nation, suggested that some dogmatic regimen should be adopted to find out whether or not the therapy played any part in these fatalities. Owing to the fact that so many of the patients admitted criminal induction, while others came in with infection spread beyond the uterus, it was advisable to adopt the conservative method of treatment. For the past three years this plan has been in vogue. The end results in this series indicate that it has been effective. Dr McNeile's remarks relative to the shifting from radical therapy to conservative treatment reminded me of my intern days in Bellevue Hospital, for there I saw the same evolutionary change. The same low incidence of operative intervention is again demonstrated in the series of cases just presented. I am not so sure that perhaps in a closed institution caring for only clinic cases or in private practice the uterus may not be emptied in a routine manner under the guidance of an experienced hand. But generally we feel that a plan of treatment should be universally adopted that is applicable to all men under all conditions where neither experience nor facilities are available, if the death rate is to be reduced.

MEDICOLEGAL ASPECT OF ARTIFICIAL INSEMINATION

FRANCES I. SEYMOUR, M.D.

AND

ALFRED KOERNER, M.D.

NEW YORK

The science of artificial insemination has been known for many years among animal breeders who desire pure stock. Within the last few years, however, artificial insemination among human beings has attracted quite a little attention, owing to the success attending its practice.

Unfortunately, or fortunately, the physician is bound by many legal restrictions in the practice of medicine, and, however morally certain he may feel in aiding or abetting certain acts, he must live within the legal restrictions and also comply with the dictates of society, which form the moral code of the country.

The question of the legitimacy of a child born in wedlock, as a result of artificial insemination from a donor other than the father, has not been brought to trial as yet. It is with this in mind that we are presenting this paper in the hope of answering some of the many questions asked us by physicians. We will present the legal relationships of all parties, one by one, and give what suggestions we have to offer and the ways in which we handle the matter. The question will be taken up only from a legal point of view.

First, let us take up the question of the legality of the mother's position. Adultery, by the New York State law, is defined as "the physical relationship between a woman or man with a partner other than the legal mate." This interpretation automatically dispenses with any such question in a case of artificial insemination, as the prospective mother does not even know or see the donor. However, we have found it necessary and advisable to insist that the woman's hus-

band be made to give a written consent that his wife be inseminated. We use a specific form as the one suggested herewith.

The signatures of both the husband and wife are affixed to the document and sworn to before a notary.

We have the wife affix her signature on the same sheet after her husband's, making a very definite statement that she too joins her husband in the request for an artificial insemination. This rules out any question that the wife did not know what was going to be done. There is one other feature that we insist on, namely, the fingerprinting of both the husband and wife—right and left thumbs—which are placed on the margin of the consent sheet next to their respective signatures. This is done for the reason that most of our patients are referred and we have no proof that they come to us for the sole reason of the insemination. We do not know whether the man with whom the wife presents herself is the legal husband or not. Although the

CONSENT FOR ARTIFICIAL INSEMINATION

I, _____, residing at _____ of my own free will and volition have requested Dr. _____ to inseminate my wife artificially with the sperm of a male selected by Dr. _____. This request has been made with the full knowledge and consent of my wife whose authorization is hereto annexed. I am making this request because it is not possible for me to procreate and because both my wife and myself are extremely anxious to have a child and because our mutual happiness and the well being of my wife will be best served by this artificial insemination.

(L. S.)
On this _____ day of _____, 193____, before me came _____, to me known and known to me to be the person described herein and who acknowledged to me that he executed the foregoing consent.

I, _____, join in my husband's request above stated and hereby authorize Dr. _____ to inseminate me artificially with the sperm of a male selected by Dr. _____.

(L. S.)
On this _____ day of _____, 193____, before me came _____, to me known and known to me to be the person described herein and who acknowledged to me that she executed the foregoing consent.

[Fingerprints of both partners]

chances of deception are rather remote that a woman would know two sterile men in her acquaintanceship, the possibility exists. We insist on a physical examination of the man to determine his sterility independent of the history presented by the doctor who refers him. This is an added precaution, first, to make sure that the man presenting himself as the husband would not be able to have any of his own children and is actually sterile. A testicular puncture is made and the material obtained is examined microscopically. This is done in addition to the usual condom specimen obtained in diagnosing such cases. This definitely proves the man's sterility. The finger-printing of the examined man identifies him as the person presented by the woman as her husband. This establishes any misrepresentation by the woman as her guilt alone and does not implicate the physician. There might be a condition arising in which the real husband is opposed to having his wife artificially inseminated and she might use a ruse by introducing to the doctor some one willing to help her attain her wish. This makes it doubly difficult in that the man whom she would have to present would also have to be sterile.

Such a precaution in itself would defeat the majority of such situations. The consent sheet is signed in duplicate, notarized and witnessed. These consent blanks are then separated and placed respectively in the vaults of separate banks and forgotten unless a

legal complication should arise. These consents legitimize the child under our present laws and establish it as the legal heir of the family unit. It also acts as a mental binder on the husband, in that he knows he can never deny having authorized the creation of his wife's child.

One may by a stretch of the imagination surmise certain hypothetical situations that might arise. Supposing for some reason in about ten years after the birth of the child, the legal father should tire of his spouse and institute divorce proceedings. It would be very easy for him to obtain a divorce if these papers were not in existence in New York State, for all he need say to a jury would be "Gentlemen of the jury, I have been sterile for all my marital life and before marriage, and I can substantiate this statement by presenting evidence and also through the testimony of doctors who have examined me at frequent intervals." The jury certainly would believe him and would not believe what they would consider the apparently fantastic story of the wife. She would plead that her physician was dead and that he would have been able to say that her husband gave her special permission for such an arrangement. This would not be sufficient testimony to convince any jury of her sincerity and no jury in the world under these circumstances would hesitate to grant a divorce to the husband. However, if the husband knew that these papers which he signed years ago could be subpoenaed, whether the physician is dead or alive he would not even institute proceedings. To obviate this possibility, therefore, any physician entering this field should train a younger surgeon in the work, familiarizing him as to the whereabouts of the records and making necessary provisions so that in case of his death his successor can carry on, because the legal complications that might arise may be far in the future, perhaps after the child has reached its majority, in the case of inheritance of his father's real property. On the other hand the wife, in her turn, could plead in the court that she did not know what she was doing and had believed that her husband's spermatozoa were to be used. The husband might even plead the same thing and then the doctor would be in for a pretty lawsuit because the jury would naturally sympathize with the plaintiff. All that would be needed to prove their suit would be the testimony as to his sterility by a physician who examined the husband's secretions prior to the birth of the child.

There is little likelihood of the mother's ever bringing suit except in the event of cross-insemination when the surgeon allowed the identity of the donor to become known.

The mother's relationship to the husband is strengthened after the birth of a child obtained in this manner. Her admiration for his broadmindedness and for her personal consideration is limitless. The bitter years of disappointment of childlessness are behind her. She now has something which she desired most of all. She bends every effort to have the child please the man who is really responsible for the child's being. The mother's moral caliber must be of the very highest or she would never have reached a physician's office asking aid in her problem. The woman of low morality would have resorted to more natural means and would have prevented her husband from ever knowing of his sterility by bearing him one or more children by questionable sources.

The mother's relationship to the physician is of necessity one of utmost confidence and sympathy. The phy-

sician has already taken the precaution that the mother does not know who the donor is and she has consented to this arrangement legally in writing. Her curiosity is met with an assurance that he is exactly like her husband. This does two things: it blocks any future idle hours of conjecturing which may torture her and she concentrates, focusing her attention on the husband, where it should very properly be.

The husband, on the other hand, having been denied paternity, sublimates his feeling and raises the child even more carefully than he would his own. He realizes that the child is a eugenic baby because the doctor has spent a great deal of time in procuring the right type of donor and that if he, as the father, gives the child the proper opportunities in life there is no limit to what he can develop him into. His respect for the mother has greatly increased. In the case in which the husband is anxious for an heir, she has consented to bear him a child under unusual circumstances. Then again, when the woman insists on entering into such an arrangement, the husband still feels that she is primarily bearing a child to make up for his deficit and would not have had to resort to this measure had he been normal. So the marital relationship turns out to be greatly strengthened.

The husband's relationship to the physician is, of course, the same as his wife's.

We now come to the question of the donor, protecting him as well as all others concerned against any possibilities of blackmail. The donor is required to deliver his specimen at a different address or apartment or at a different time than the arrival of the patient. Another simple method is to keep the two hospitalized during the period. We find this much easier. It eliminates the question of possibility of blackmail by the donor. He has no possible way of knowing who the recipients are and no one can learn the identity of the donor.

If the physician should consider it preferable for any reasons of his own to transfer the sperm in his office, and should the donor by any chance enter into collusion with a third party and have both entrance and exits of the office watched, there is little danger, because of the number of patients going in and out during office hours.

There is one more legal aspect to this question, and that is the donor's relationship to his own legal wife. It is preferable that the donor be married, as it eliminates a tendency to promiscuity. However, notarized permission from the legal wife stating that her husband may participate in this scientific venture is essential. We do not know but that such a venture on the part of a husband may be a violation of the laws against adultery. Therefore, as in New York State, if the wife is cognizant of the condition and has so signified in writing, she is unable to obtain a divorce on these grounds, as condoned adultery nullifies grounds for divorce.

It is with all these hypothetical legal entanglements well in mind that a specialist undertakes this type of work. The surgeon who does an artificial insemination should never become the obstetrician in the same case. The pregnant woman should choose another obstetrician in about the seventh month who is not familiar with the unusual circumstances of the pregnancy. He can in all good faith make out the baby's birth certificate under the direction of the parents and give that child a document irreproachable in the eyes of the law. The child is then established as the legal offspring. This may be a subterfuge but it is a necessary one. It is a protection for the child, and the responsibility of

the child is primarily the physician's. Morally the physician is bound to see that all possible unhappiness is avoided. It is easy to understand that when the child reaches adolescence, assuming that it is a normal unit in his own family, there would be great danger, if by some inadvertent remark the child should discover any irregularity in his creation. The damage to its psychologic make up would be disastrous. An inferiority complex would be set up with a root that psychoanalysis could not destroy and the child's maladjustment to society would result.

We feel very strongly that the responsibility lies with the physician not only in the creation of the child but in its future welfare, particularly in its adjustment in its own family unit.

Another phase to the question arises when the sterile husband asks to have a relative be the donor. This should never be consented to. The usual request by the husband is that one of his brothers act as the donor because he is sure that the child would look like him. Genetically, of course, this need not be true. Psychologically this would be unsound, for if the mother should know who the actual father of her child was there would be danger of the transference of her affections to the brother, especially as he resembles her husband, particularly if he is single. If, on the other hand, he has a wife and child of his own, there would be the danger of breaking up two families if the feeling should be reciprocated. This is usually followed by a suggestion that the brother be used without the knowledge of his wife. However, as the brother or near relative may succumb to the human failing and tell her at a later date, causing extreme mental shock, this also is unwise. Furthermore, if he should be married, the brother could not be used without the permission of his wife, and this would entail many people knowing the situation, all except the wife. Legally, the brother's wife would have a case against both the doctor and her own husband, if she were not told and later discovered the fact. Under these circumstances, with so many knowing, the child would eventually be told. The husband then might naively suggest that his brother be brought to the office under some pretext and a specimen obtained which could be used on his wife, the idea being that the brother would not know anything about it. Thus, of course, is absolutely impossible for a physician to do under any circumstances, it being dishonest as well as unethical. Such a suggestion should be immediately refused and the idea of stealing impressed on them, because we regard this worse than ordinary thieving. If such a case should ever arise, punishment to a doctor participating in such a crime should be meted out in full. Further a relative should never be used as a donor, even with his permission, because at a subsequent date he might become so attached to the child that he would sue for custody of the child, and a jury would be inclined to favor him.

There have been recent cases in the New York courts in which an effort has been made to prove the paternity of the child through the determination of peculiarities of hereditary characteristics shown by blood grouping. This should also be considered in selecting a donor, choosing one whose blood group corresponds with that of the husband.

It would be well to bear in mind that a child born in wedlock is the legal heir unless his paternity is disproved and a "final adjudication is handed down by a court." Unfortunately the father in these cases does not wish to go through the formal legal adoption pro-

ceedings (although this would be a safeguard for the child to inherit his real property), for it would publicize the one thing he desires to conceal, namely, the cross-insemination of his wife. If the man feels uncertain that the child may be blocked from inheriting such real property as he wishes to leave it, as for instance in a case in which a wife, wishing to inherit all the money or control it, might seek to disprove the child as her demised husband's legal heir, he can draw a will stating that if any action is taken by any beneficiary the one so doing forfeits his or her share under the will. To make it even stronger he can insert a clause canceling any bequest to the wife should she marry within one year and a day from the date of filing the will for probate. Then the child's legality is protected as time for any legal action will have expired.

These are some of the many considerations of artificial insemination from the medicolegal point of view. Some suggestions are given to aid in avoiding some of the complications that may arise and so to prevent them from casting a shadow of unhappiness over the child we have helped create whose sole excuse for being is to bring happiness to an otherwise unhappy marriage.

53 East Ninety-Sixth Street

THE PRESENT STATUS OF CYSTOMETRY

D. K. ROSE, M.D.
ST. LOUIS

Cystometry¹ embraces more than bladder pressure more than vesical volume pressure. It is a sensory vesical volume pressure with sphincter control diagnostic procedure. As the bladder immediately accommodates itself to incoming fluid it is necessary to use a two-way catheter to provide a fluid intake as well as a recording compartment for the instantaneous return pressure to obtain a complete graph in the process of filling. This means, as nearly as possible an uninterrupted tracing of muscle contraction and relaxation of the bladder wall on which line sphincteric reactions, sensations of temperature, the first desire to void and degrees of overdistention can be noted. The relationship of volume pressure to sensation and sphincter control is often abnormal and is of more value in cystometric diagnosis than any one factor alone.

The clinical value of this procedure lies chiefly in its identifying the bladder to clinicians as an organ of practical physiologic importance in differentiating all types of neurogenic from physically obstructed bladders, so that treatment may have a better foundation and in offering bladder function tracings to explain symptoms and determine the results of treatment in dysuric bladders. Clinically in my experience, it quite alters the usually accepted view of bladder importance in prostatic and bladder surgery, particularly in relation to infection. It differentiates types of dysuria after surgery, childbirth trauma and disease or injury of the brain or spinal cord.

For experimental work undoubtedly a continuous graph is necessary,² but for clinical or bedside work

methods of interrupted readings, that is introducing 50 cc and then taking a reading, are satisfactory. It was the method used in the first cystometric work³ and the general ideas were verified and simplified by Muschat⁴ in developing his cystometer. With such methods however, the fine oscillations in pressure can not be obtained, and in oscillations of wider excursion it is impossible either to take the reading exactly at 50 cc, for example, or to determine the type of oscillation as in cystometrograms in pyelitis of pregnancy⁵ or in the spina bifida work of Langworthy and Dees⁶.

Further as a most important adjunct in the efficacy of the procedure it was soon noted that obtaining a second tracing at each examination was absolutely necessary not to verify the first but to note on the second curve the influence of the first filling. In general the normal or irritable bladder is stimulated to decreased capacity and increased pressure while the low sensation type of neurogenic bladder shows diminished sensation with increased capacity after the distention of the first filling.

Flat or low pressure often noted in the first graph was thought to be due to breaking down or decompensation of the bladder wall, but I now attribute such readings, particularly in the first curve, to inhibition as well as to decompensation. That it was due to inhibition in some instances was first pointed out by Denny Brown and Robertson⁷ and later verified by Parker and Rose⁸. It is now accepted in our clinic that in the majority, initial low pressure tracings in the first two readings show that the case is of the non-neurogenic type although occasionally they show bladder wall decompensation, usually inhibitions are psychic from fear or reflex from instrumentation⁹. The differential diagnosis can be made only by doing at least two fillings in the first cystometric examination.

Lewis, Langworthy and Dees¹⁰ point out that injury to the motor pathways renders the consequent frequent small amplitude waves of bladder contraction "ineffective in emptying the bladder." The stretch reflex of the muscle of the bladder wall, they point out is hyper-

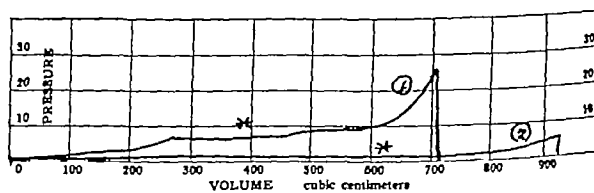


Chart 1—Typical cystometrogram showing delayed sensations and the effects of the first filling in an anesthetic low pressure bladder in that the second curve shows greater capacity, diminished sensations and lower pressure than the first curve. In other words the first filling breaks down the resistance of the bladder wall which secondarily influences the sensations. The asterisk in these charts indicates the first desire to void.

active "with release of cortical control." Muschat⁴ places the sensation of a first desire to void above 250 cc in the hypotonic and under 150 cc in the hypertonic bladder. I believe that correlation of points such as these, together with observation of the behavior of

3 Muschat Maurice. The Value of Cystometry. *J. Urol.* 33:366-383 (April) 1935.

4 Langworthy O. R. and Dees J. E. A Study of Bladder Disturbances in Spina Bifida. *J. Urol.* 35:213-226 (Feb.) 1936.

5 Denny Brown D. and Robertson E. G. The State of the Bladder and Its Sphincters in Complete Transverse Lesion of the Spinal Cord and Cauda Equina. *Brain* 56:397 (Dec.) 1933.

6 Parker M. M. and Rose D. K. Bladder Inhibition. *Arch. Surg.* to be published.

7 Lewis L. G. Langworthy O. R. and Dees J. D. Bladder Abnormalities Due to Injury of the Motor Pathways in the Nervous System. *A. M. A.* 105:2126-2132 (Dec. 28) 1935.

8 Muschat Maurice. Simplified Interpretation of Cystometrograms. The Three Factor Principle. *J. Urol.* 34:340-343 (Oct.) 1935.

From the Washington University School of Medicine and Barnes Hospital.

Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

1 Rose D. K. Determination of Bladder Pressure with the Cystometer. A New Principle in Diagnosis. *J. A. M. A.* 88:151-156 (Jan. 15) 1927.

2 Rose D. K. and Rollins P. R. Pyelonephritis in Pregnancy. *J. A. M. A.* 98:235-240 (Jan. 24) 1931.

the sphincters in their cystometric interpretation, will be enhanced by taking two readings instead of one

The two types of imperfect sphincter control causing incontinence to be noted are whether the fluid is expelled as a voiding or whether it slowly leaks out around the catheter. The position of the catheter in its relation to the body points definitely to the status of the voluntary sphincter.⁹ If it approximates a 90

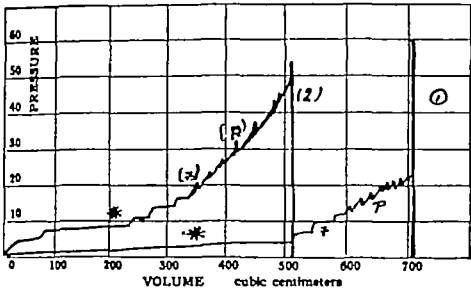


Chart 2—The patient had 900 cc of uninfected residual urine removed just previous to the taking of the cystometrogram. Retention was secondary to prostatic hypertrophy. A hypertrophic wall is demonstrated by the steep ascent after the sensation of fullness (P). The relationship of manner of rise of pressure to 520 cc in curve 1 and to 270 cc in curve 2 suggests inhibition in 1. The decompensation is physiologic that is, back pressure anesthesia or adaptation with an anatomically thickened bladder wall. In such a bladder I have come to expect about this degree of reaction to the first filling. These deductions would be impossible from a single cystometric curve.

degree angle with the body there is spasm or an increased sphincter resistance. If it parallels or drops below the plane of the body, it shows a diminished resistance. This mobility of the posterior urethra is an important factor in sphincter control. It is essentially a disalignment of the internal and external sphincter openings⁹ and occurs in both males and females. It is less forceful in the latter.

The main subdivisions of cystometric interpretation are myogenic and neurogenic and their interrelationship. When an altered reaction, primary in the musculature, is secondary to scar infection overwork, obstruction or trauma it is considered myogenic. When the changes are primary in the nervous system with consequent alteration in the function of the wall of the bladder, it is considered neurogenic. In these instances the neurogenic changes may be of the wall itself or of the sphincters, considered the "bladder lock" by Muschat.³ In this regard it is to be hoped that the sphincterometer developed by Simons¹⁰ will be of help. The neurogenic changes may be either an increase or a decrease of irritability and tone of either the bladder wall or its sphincters. They may be either directly central or peripheral or entirely reflex.

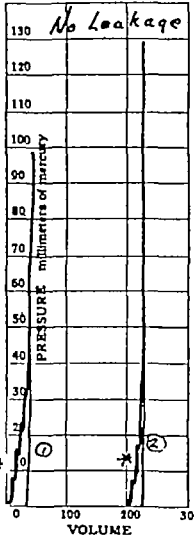
Any increased resistance by the outlet causes a hypertrophy of the bladder wall to a point sufficient to overcome the obstruction. This process is gradual and its degree can be interpreted by the cystometrogram. Should the bladder wall break down or decompensate back of an obstruction¹¹ that is, allow a residual urine to occur, it would compensate rapidly on catheterization in the myogenic and slowly in the neurogenic particularly if there should be marked diminution in sensation. In the hypertrophic bladder, removal of the catheter drainage without removal of the obstruction leaves a small capacity, high pressure, traumatized and so absorptive surface.

Completely contracted bladders back of traumatic or congenitally deficient outlets challenge an attempt to influence their innervation and so restore, at least an increased volume, a low pressure acceptable.

I favor the opinion that sympathetic and parasympathetic action or function is present but that such an anatomic division cannot be correlated with function, that is that the sympathetics in their principal anatomic distribution are by no means alone the nerves of bladder filling nor the parasympathetics the nerves of bladder emptying. It is important to establish this as it influences such surgical procedures as presacral nerve resection.¹²

There are pain, some bladder dilator but many contractor fibers in the sacral nerve supply (parasympathetics) as well as in the hypogastric (sympathetics) nerve supply to the bladder. It has been demonstrated that, with complete section of the spinal cord below the sympathetic supply to the bladder, stimulation of a sacral somatic area can produce reflex inhibition of bladder contraction.⁸

In cases of dysuria in the presence of a normal central nervous system, this reflex inhibition is clinically important. It plays its part in postoperative and postpartum retentions. It can also be associated with extraneous trauma even with a fractured hip. For example, should a person suffer such an accident and soon after develop a retention with overflow yet give a history of no dysuria previous to the injury from a cystometric analytic standpoint as long as the patient is comfortable our cue is watchful waiting on the ground that it is a reflex low pressure retention. With an uninfected urine and normal kidney function and the knowledge that this reflex inhibition will disappear it is best to leave him just as the accident found him. Should the bladder remain overdistended with paradoxical overflow too long after the accident a single catheterization to compensate or contract and thicken the bladder wall may be indicated, delaying it in the hope that an infection can be avoided.



Psychic influence is one of inhibition, and recently it has been demonstrated that even in markedly irritable bladders voluntary inhibition can be demonstrated on the cystometric chart. Section of the cord above the bladder supply removes this psychic inhibition,⁶ for example, in a patient with some senility whose cerebration is further and rather abruptly interfered with by toxicity. If such an individual has a hypertrophic or compensated bladder wall, when the inhibition disappears urine may either drip constantly or spurt frequently in small amounts, owing to the continued contraction secondary to the release of inhibition. In such instances catheterization would only increase or

⁹ Rose, D. K. Urinary Incontinence. *J. Missouri M. A.* 32:363 (Sept.) 1935.
¹⁰ Simons, Irving. Studies in Bladder Function. The Sphincterometer. *J. Urol.* 35:96-102 (Jan.) 1936.
¹¹ Rose, D. K. Changes in the Wall of the Bladder Secondary to Prostatic Obstruction. *Arch. Surg.* 25:781-795 (Oct.) 1912.

¹² Learmonth, J. R. and Braasch, W. F. Resection of Presacral Nerve in the Treatment of Cord Bladder. *Surg. Gynec. & Obst.* 51:1494 (Oct.) 1930.

prolong incontinence by further contracting and irritating the thickened and released bladder wall. I believe that nocturia, frequently the first symptom of prostatic hypertrophy, is due to the release of inhibition by sleep plus the increased strength of contraction of the bladder wall, compensated to the early obstruction.

Neurogenic bladders, by the aid of cystometrograms, can be studied with interest and classified to some extent. The procedure in these attempts is supplemental only. The greatest value lies possibly not in locating the lesion of the central nervous system but in demonstrating its effect on the bladder function and so enabling the clinician to wait with safety or to institute the proper procedure from the point of view of obtaining drainage of urine or infection.

In classifying neurogenic bladders cystometrically, whether the lesion is of the brain or cord or is peripheral, one must simplify it to terms of bladder function, that is, alteration of tonus of the bladder wall and outlet and the possible effects of one on the other, together with associated sensation. Opposing action of the bladder wall and internal sphincter as to contraction and dilatation is one unit, but their alteration in tone may associate with or be diametrically opposite to that of the voluntary, external sphincter. The latter is more complex than the action of the internal sphincter, comprising as it does direct urethral compression within the triangular ligaments as well as mobility of the prostatic urethra. Innervation of the skeletal muscles of the voluntary sphincter is by the pudic nerve.

On rare occasions pudic nerve neuritis is diagnosed on the basis of a spastic, irritable urethra and bladder without infection or other causative factor being demonstrable.

Considerable excellent work has been done in the past few years both on cystometry and on bladder physiology. It is work that, in time and with its better

correlation, will give final and secure information, which can be used in cystometric interpretation.

Langworthy and Dees,⁴ using their continuous record method, feel that it is possible to distinguish posterior from anterior root damage. The work done in spina bifida is based on the type of curve they obtain between the intermittent fillings of the bladder with 50 cc of fluid. In this connection they stress that the mercury manometer is not as satisfactory as water. This adds a new principle, something more akin to the electrocardiographic

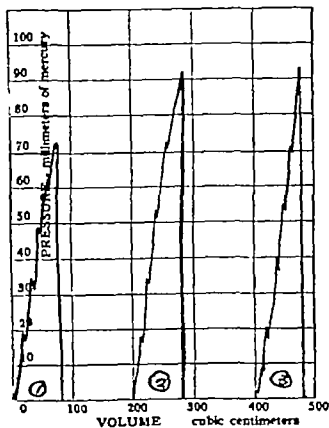


Chart 4—Three tracings taken at one sitting demonstrating the type of bladder function occurring with cortical control release due to toxicity in an individual with an early prostatic hypertrophy and a hypertrophic wall previously established.

tracing, and deserves further study. They feel that large atonic bladders are due to injury of the posterior spinal roots. The statement of Denny-Brown and Robertson⁵ that apart from the faint background of maintained tonic activity spontaneous vesical activity takes the form of waves of contraction appearing in rhythmical progression lends hope that the type of the wave in a cystometrogram may be of diagnostic importance.

Cystometric determinations of brain tumors offer interesting speculation. We are assured of the inhibitory influence of the cerebrum. This can easily be proved by asking a patient to inhibit while a cystometrogram is being made.⁶ It can be shown that the effect of removing this inhibition is, in general, decreased bladder capacity, if one remembers always to consider any complicating myogenic factor in making these observations.

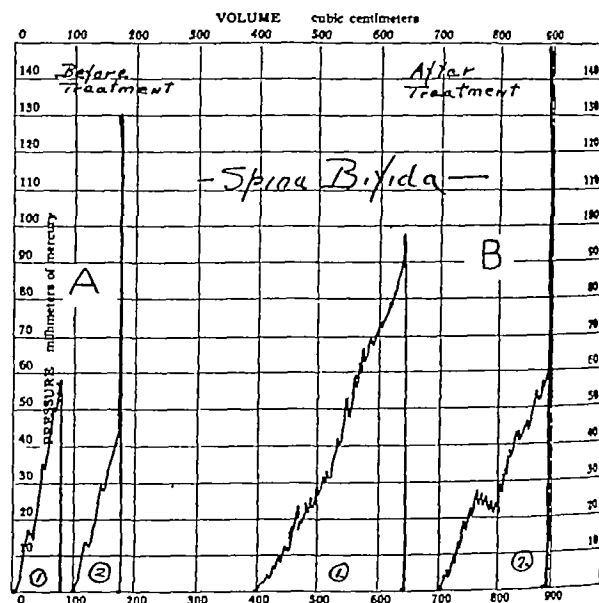


Chart 5—The two curves represented in 4 are bladder tracings in a 10 year old boy with spina bifida with a complete sacral anesthesia posterior urethral anesthesia and a slightly spastic anal sphincter which on stimulation by palpation, opens actively and remains in dilatation of increased tonicity. Besides spina bifida the child has a hydrocephalus of mild degree, probably associated with an early operation for spina bifida, congenital dislocation of both hips and club foot. There was constant incontinence so that orthopedic surgery was impossible. Hydraulic distention had been carried out once a day for a week when B, as represented by the last two curves was obtained. The patient had a tremendously spastic bladder which remains the pressure is still high but the capacity is definitely increased. Associated with this bladder function incontinence practically ceased so that orthopedic surgery was possible on the hips.

Watts and Uhle¹³ conclude that "abnormalities of bladder function, tone and sensation in patients with brain tumors are probably the result of a disturbance of bladder representation in certain parts of the brain and present evidence of 'bladder representation' in the cerebral cortex, the region of the hypothalamus and even more caudal in the brain stem."

Enough work has been done to give promise to future endeavor or to associate alteration in bladder function with specific brain disorder. As yet, however, in this regard the cystometer helps in the greatest degree in analyzing the change in bladder function so that it may be treated more intelligently.

3720 Washington Boulevard

ABSTRACT OF DISCUSSION

DR LLOYD G. LEWIS, Baltimore. My co-worker Dr. Orth¹⁰ and R. Langworthy¹¹ was able to show experimentally that the urinary bladder is controlled by reflex arcs in the brain and spinal cord and that nuclei exist in the cerebral motor cortex and in the midbrain. By cystometric studies he showed the effects produced by interruption of either the motor or the sensory pathways in the brain and spinal cord. These are fundamental conceptions. Based on this experimental evidence, we set out to study the effect of isolated neurologic lesions.

¹³ Watts J. W. and Uhle C. A. W. Bladder Dysfunction in Cases of Brain Tumor. A Cystometric Study. J. Urol. 34: 1030 (July) 1935.

on bladder function in man. Last year it was my privilege to demonstrate before this section cystometric graphs in lesions of the motor pathways. This picture is nearly complete. We have continued to study the effects of sensory and complicated lesions of the brain and cord. We believe that it may be possible by correlation of data to know the neurophysiology of bladder control. I believe that Dr. Rose will concur that a cystometric study cannot replace a careful neurologic examination. A thorough neurologic examination is indispensable for the interpretation of cystometric data. The cystometric study does not obviate the necessity of performing complete urologic examination. We have used the cystometer to aid in the differential diagnosis between malfunctioning bladders produced by obstruction and neuropathology. But the cystometer is of paramount importance in the differentiation of neurologic lesions themselves. Is the lesion on the motor or the sensory side of the reflex arc? At what level are the arcs interrupted? What effects may drugs have on vesical function? Can relief of symptoms be expected by an operative procedure? These questions can possibly be answered by the aid of cystometry. In our simple laboratory and clinical equipment we have put up with clumsiness and inconvenience for the sake of graphic representation of every slight variation in bladder pressure. Dr. Rose should be congratulated on first devising a cystometer with a graphic recording apparatus. We prefer the water to the mercury outfit. We have tried both continuous and interrupted methods of filling using both two-way and single catheters. We discarded the continuous inflow method because we found that two consecutive readings did not correspond. Dr. Rose's interpretation of these observations demands consideration, but we believe that interrupted filling by 25 or 30 cc. increments gives added information by allowing us to study the stretch reflex. In upper motor neuron lesions, striated and bladder muscles behave alike in their response to sudden stretch, and hyperactive reflexes are obtained. There is no typical syphilitic bladder, there is no typical spina bifida bladder, there is no typical bladder involvement produced by transverse myelitis or brain tumor. The bladder abnormality depends on sensory or motor tract involvement.

DR. A. LLOYD STOCKWELL, Kansas City, Mo. Clinical cystometry offers the most practical method to determine the normal or variations from normal filling of the bladder with urine under controlled conditions. Its limitations are largely lack of experience of the observer and obtaining accurate readings. Ever since Mosso and Pellacani first recorded, in 1882, fluctuations of the filled bladder on a smoked drum studies on the bladder, particularly by the great investigators Rehisch, Adler, O. Schwarz, Samuel Amberg, Muschat, D. K. Rose and particularly Langworthy and Cobb and Lewis, have made common knowledge the various expressions which the bladder registers against increasing distention in various normal and abnormal conditions. The outstanding work, however, is that of Dennie Brown and Graeme Robertson, in which the fundamental statement is made that to understand anything about the abnormal functions of the bladder one must first understand and determine how the bladder that has some degree of autonomy is still subjugated to the control of the will. I have been investigating bladder incontinence in children for the last year and a half, using a cystometer sphincterometer of my own design that utilizes a two-catheter principle. It has produced results enabling me to increase accuracy in diagnosis and therapy for the child when he presents himself for relief of incontinence. The important fact about bladder control is that an enuretic individual has to learn to develop an inhibitory control. In other words vesical control in the conscious (awakened state) or subconscious (sleeping state) is largely an inhibitory effect of the reactions of vesical distention. When interpreting cystometrograms one must consider the position of the patient and fluctuation of psychologic factors at the time of examination and must correlate the desire to void, appreciation of temperature, the total curve, appreciation of discomfort and distention, and intactness of the sphincter or its lack of intactness at capacity. Evaluation permits a fairly accurate idea of intactness of central nervous system pathways, peripheral paths and local neuromogenic factors.

DR. RICHARD CHUTE, Boston. To the urinary surgeon the practical importance of cystometry is the ability to be able to

decide between a neurogenic bladder and prostatic obstruction. Just about once or twice a year I have a case in which it is very hard to tell whether it is a neurogenic bladder or prostatic obstruction. The muscular tone of the bladder may have been broken down by a prolonged losing fight against prostatic obstruction, with a mounting residual urine, and it may act like a neurologic bladder, and I think that the only way one can surely differentiate is by a neurologic examination, including cystometry, with possibly the use of drugs such as mecholyl. Cystometry will tell the difference between a neurogenic bladder and prostatic obstruction and will prevent operations for prostatic obstruction in a case of neurogenic bladder. I saw a man of about 60 who had had an abdominoperineal resection of the rectum for carcinoma. Not long after this he developed complete retention. One couldn't feel his prostate, of course, and by cystoscopy one couldn't tell. Through cystometry it was found that he had a neurogenic bladder and that there was no purpose in taking out the prostate, as had been recommended by another urologist.

DR. D. K. ROSE, St. Louis. It is a great pleasure to have this discussion. I think the work of Dr. Lewis has been a most valuable contribution. It is more of that type of work that is going to supply data on which to develop cystometry.

GROSS HEMORRHAGE FROM PEPTIC ULCER

ITS MORBIDITY, MORTALITY AND TREATMENT

LEON GOLDMAN, M.D.
SAN FRANCISCO

Many physicians believe that hemorrhages from peptic ulcer are rarely fatal. The potential dangers of this condition, therefore, are not fully appreciated. If one concludes, from his individual experience, that gross hemorrhage from peptic ulcer is rarely or never fatal, one is likely to offer a good prognosis, adopt a laissez faire policy and wait for the bleeding to stop. The records of pathologists, coroners and large city hospitals, however, show that the mortality of this complication is much higher than is generally believed.

For the purpose of arriving at a better understanding concerning the management of these patients, a study was made at the San Francisco Hospital of the 1,025 entries of 890 patients with peptic ulcer, from Jan. 1, 1928, to Dec. 31, 1934. Three hundred and forty-nine patients (38 per cent) entered the hospital because of gross hemorrhage from peptic ulcer¹ or developed this complication during the period of hospitalization. Of this number, thirty-nine (11.1 per cent) died of exsanguination while an additional seventeen (4.9 per cent) died of conditions associated with the bleeding, such as perforation of the ulcer, pneumonia and cerebral or cardiac thrombosis, thereby bringing the total mortality of gross hemorrhage from peptic ulcer to 15 per cent. The reason for this apparently high mortality will appear later.

As bleeding peptic ulcer is not uncommon, such figures indicate the need for careful consideration of the problems involved.

¹From the Department of Surgery, University of California Medical School (the University of California Service at the San Francisco Hospital).

Read before the Section on Surgery, General and Abdominal, at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

²The term gross hemorrhage in association with peptic ulcer refers in this discussion to the vomiting of bright red or dark blood or the presence of tarry stool in addition to secondary anemia sufficient to produce weakness, pallor, dyspnea or rapid pulse. Patients with blood streaked or occasional coffee ground vomitus, occult blood in the stool or rare tarry stools are not included in this definition as these are considered merely as signs of the activity of the ulcer.

PATHOLOGIC ANATOMY

By its very nature, it must be assumed that an ulcer which erodes a blood vessel and produces a gross hemorrhage is active and progressing. Ulcers in the stomach or along the anterior wall of the duodenum are more likely to heal early than those in the posterior wall of the first or second portion of the duodenum. The latter show more tendency to become chronic and to cause severe bleeding. The invasion of the retro-duodenal and pancreatic tissue by an ulcer in the posterior wall of the duodenum causes an inflammatory

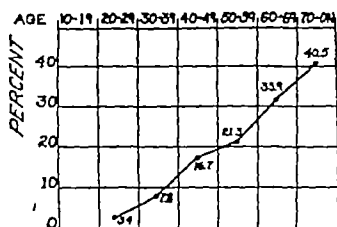


Chart 1—Mortality percentage of all peptic ulcer cases by age groups

process with adhesions to the periduodenal structures, thereby holding the ulcer open and enhancing chronicity. Fatal hemorrhage usually is caused by erosion of a large artery along the posterior wall of the first or second portion of the duodenum where it overlies the pancreas. In

advanced cases, the bed of the ulcer is found in pancreatic tissue and the wall of the duodenum has been destroyed. In the crater there is a large sclerotic artery, running longitudinally or perpendicularly into the ulcer. In the chronic cases the arterial wall is surrounded by a variable amount of granulation or scar tissue, which assists in holding the artery open so that the lumen gapes and often will admit a fair-sized probe. The age of the patient is not necessarily an index of the inelasticity of this artery, as there is some evidence to suggest that the presence of chronic inflammation may produce arteritis or periarteritis and rigidity of the local vessels. In a smaller group of fatal cases, superficial ulcers are present with erosion of the submucosal vessels. Occasionally small granulating ulcers are found which, in the absence of other demonstrable cause must be assumed to be the source of the fatal hemorrhage.

The gastroduodenal artery, a branch of the hepatic artery, bifurcates, forming the right gastro-epiploic and the superior pancreaticoduodenal arteries. The latter vessel usually is the one involved in duodenal ulcer, because it supplies the area most commonly affected. The inferior pancreaticoduodenal artery is a branch of the superior mesenteric artery, and the vascular anastomosis behind the duodenum is so diffuse that it is unlikely that bleeding can be controlled except by the ligation of all these vessels. Bleeding from a gastric ulcer usually arises from one of the coronary vessels of the lesser curvature because the vessels lie between the layers of the lesser omentum closely applied to the wall of the stomach. Severe bleeding from ulcers of the greater curvature is rare because of the infrequency of benign ulcers at this site and the fact that the gastro-epiploic artery is not in direct contact with the wall of the stomach.

SYMPTOMS

The symptoms and signs of gross hemorrhage from peptic ulcer vary with the volume and rapidity of the loss of blood which usually, although not always, corresponds to the size of the artery eroded. Exacerbation or recurrence of the symptoms of ulcer usually immediately precedes the onset of hemorrhage. Occasionally however bleeding occurs suddenly in the patient who has been without symptoms for a long

time, or even in the patient with no history of such symptoms. Dietary indiscretion or indulgence in alcohol may immediately precede the onset of the hemorrhage. Nausea usually is the first symptom and may be followed by the vomiting of dark red, liquid or clotted blood, and by fainting. Either hematemesis or tarry stools may occur alone, or both may occur, whether the ulcer is in the stomach or in the duodenum. Tarry stools may not be present for some time after the hemorrhage although, if it is severe unchanged blood may be expelled from the rectum soon after the initial hemorrhage. Shock ensues after severe hemorrhage with a marked fall in blood pressure, rise in pulse rate, cold perspiration, and pallor. The extent of the hemorrhage cannot be judged early in its course by the hemoglobin or red blood cell count, as the loss is quantitative and not qualitative. It is not until the volume of the blood is restored by fluids from the tissues or by parenteral administration, that the drop in hemoglobin and red blood cell count becomes evident. In estimating the severity of the hemorrhage, therefore and determining whether or not it has been controlled one should be guided early in the course by the blood pressure and later by the hemoglobin and red blood cell count as well as by the pulse rate, stool, and general condition of the patient. Gross hemorrhage from peptic ulcer must be differentiated from other causes of gastro-intestinal hemorrhage such as ruptured esophageal varices, carcinoma, polyps or hemorrhagic diathesis.

MORBIDITY AND MORTALITY

There is obvious difficulty in evaluating statistical reports concerning peptic ulcer especially as regards the bleeding type. That such difficulty exists is shown by the variation in statistics from different clinics. Eggleston² reported copious hemorrhage in 19 per cent of 500 patients with peptic ulcer and this was present in 17 per cent of gastric and 14 per cent of duodenal ulcers in W. J. Mayo's³ series. Balfour⁴ reported the incidence of hemorrhage in 25 per cent of all patients with duodenal ulcer, followed over a period of ten years. Paterson⁵ found severe or recurrent gross hemorrhage in 30 per cent of all patients with ulcer. The incidence in Crohn's⁶ series was 29.5 per cent in gastric and 19.5 per cent in duodenal ulcer while Hurst and Stewart⁷ encountered 18 per cent in gastric and 19.5 per cent in duodenal ulcer. They as well as Crohn concluded that the incidence of gross hemorrhage in patients who are hospitalized is approximately 25 per cent while, if the ambulatory or outpatients are included the incidence is about 10 per cent.

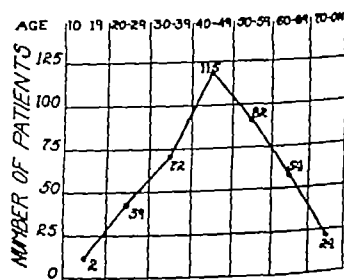


Chart 2—Incidence of gross hemorrhage by age groups

- ² Eggleston, E. L. A Critical Review of Five Hundred Cases of Gastric and Duodenal Ulcer, *J. A. M. A.* 75: 1542 (Dec. 4) 1925
- ³ Mayo, W. J. Gastric Ulcer, *J. A. M. A.* 65: 1069 (Sept. 25) 1915
- ⁴ Balfour, D. C. Surgical Treatment of Hemorrhagic Duodenal Ulcer, *Ann. Surg.* 96: 581 (Oct.) 1932
- ⁵ Paterson, H. J. The Treatment of Severe Gastric and Duodenal Hemorrhage, *Proc. Royal Soc. Med.* 17: 1 (June) 1924
- ⁶ Crohn, B. B. Affections of the Stomach, Philadelphia, W. B. Saunders Company 1927
- ⁷ Hurst, A. F., and Stewart, M. J. Gastric and Duodenal Ulcer, London, Oxford University Press 1929

Reports from several hospitals indicate that it is not infrequent for patients with peptic ulcer to bleed to death Chuesman⁸ gave the mortality as 25 per cent of those patients having severe gross hemorrhage Ross⁹ of Melbourne reported 58 per cent of deaths in forty-three cases of severe bleeding peptic ulcer The mortality in Allen and Benedict's¹⁰ series was 14.5 per cent

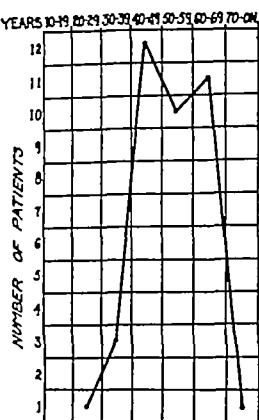


Chart 3—Mortality from gross hemorrhage by age groups

in 138 cases of sudden, massive duodenal hemorrhage They believed the age of the patient and the presence of arteriosclerosis to be the most important prognostic factors According to Lahey's¹¹ experience in his private hospital practice 5 per cent of patients with gross hemorrhage died in the hospital before they could be prepared for surgical treatment

Hurst and Stewart, as well as Crohn felt that the greater number of deaths occurred from the original brisk hemorrhage and that,

if it did not cause death subsequent bleeding would be relatively safe Reports from other clinics, however, do not support this observation

EXPERIENCE AT THE SAN FRANCISCO HOSPITAL

The San Francisco Hospital, a city hospital, cares for varied groups of patients, many of whom are in poor social and economic circumstances These patients enter the hospital for urgent or emergency treatment Because of the difficulties they encounter in following adequate therapy, the majority of those with peptic ulcer enter this hospital because of some serious complication A very high incidence of hemorrhage can therefore be expected in this group These statistics are from hospital patients of whom only a few returned for follow-up care

During the seven-year period from Jan 1, 1928 to Dec 31, 1934, patients with peptic ulcer made up 1.1 per cent of all the hospital entries Of this group of 1,025 entries (890 patients) 349 patients, or 39 per cent, entered because of gross hemorrhage, or this complication ensued after admission 209 or 23 per cent, entered because of perforation of a peptic ulcer, and 332, or 37 per cent, entered because of obstruction, for medical care or for other reasons

In a study of seventy-three cases of gastric and 165 cases of duodenal ulcer, proved by x-ray examination, surgery or autopsy, we found that in the former, 64 per cent had hematemesis 65 per cent had tarry stools, and 31 per cent had both Of the duodenal patients, 50 per cent had hematemesis, 84 per cent tarry stools, and 34 per cent both In general it may be said that tarry stools occur more often and hematemesis occurs less often in duodenal ulcer, but in a given case, one cannot conclude from these factors alone on which side of the pylorus the ulcer is

The total mortality of patients with ulcer was 17 per cent (chart 1), increasing in direct proportion to the age of the patient, that of patients with perforation both operated on and not operated on, was 32 per cent, the mortality rising with the number of hours elapsing before surgery The mortality of gross hemorrhage was 11.1 per cent from exsanguination alone but rose to 15 per cent when the deaths from complications associated with hemorrhage were added It should be emphasized in this connection that the additional 4.9 per cent mortality includes six patients in whom perforation ensued following the onset of hemorrhage, thus presenting two serious complications Autopsy showed that in three of these patients an ulcer in the posterior wall of the duodenum had extended laterally in a circumferential manner and had perforated into the peritoneal cavity Such evidence refutes the common impression that bleeding ulcers do not perforate The remaining eleven patients of this group died of pulmonary, cardiac, cerebral or renal complications We feel that these cases should be included in the mortality statistics, but, because the hemorrhage was apparently controlled in most of them, they are classified separately

The incidence of gross hemorrhage reaches its peak during the fifth decade and seven tenths of the hemorrhages occur after the age of 40 years (chart 2) In considering the mortality from gross hemorrhage by age groups only those patients who were exsanguinated as determined by autopsy or those who died without other cause of death being specified, were included in our study In all of these the hemoglobin was below 30 per cent and the red blood cell count below two million, there were, in addition signs of syncope and clinical evidences of bleeding The average age of the patients who died was 54 years and the highest mortality was between the ages of 40 and 70 years when arteriosclerosis plays a part (chart 3) Of this group 70.6 per cent showed evidences of arteriosclerosis Of the patients who died of exsanguination approximately twice as many had duodenal ulcer as had gastric ulcer

Chart 4 showing the mortality in relation to the number of hemorrhages demonstrates an abrupt rise in the mortality after the second hemorrhage Approximately 40

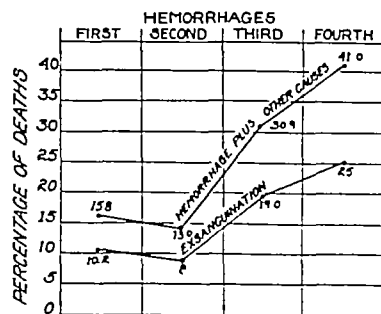


Chart 4—Known number of gross hemorrhages and mortality

per cent of these patients had had at least one hemorrhage before the onset of the illness for which they entered the hospital This chart shows the mortality from hemorrhage alone as well as that from the complicating causes of death such as perforation, pneumonia, cerebral thrombosis and cardiac disease, though the bleeding ceased before death occurred

The presence of a single gross hemorrhage or of recurrent hemorrhages indicates that the ulcer is not likely to heal under medical treatment Jordan and Kiefer¹² found that, in 30 per cent of patients with a history of one gross hemorrhage from a peptic ulcer

⁸ Chuesman W. E. Mortality of Severe Hemorrhage from Peptic Ulcers. *Lancet* 2: 722 (Oct 1) 1932
⁹ Ross K. The Treatment of Hemorrhage from Peptic Ulcers. *M J Australia* 1: 168 (Feb 8) 1930
¹⁰ Allen, A. W., and Benedict E. B. Acute Massive Hemorrhage from Duodenal Ulcer. *Ann. Surg.* 98: 736 (Oct.) 1933
¹¹ Lahey F. H. Selection of Operation in the Treatment of Gastric and Duodenal Ulcer. *S Clin North America* 14: 1085 (Oct.) 1934

¹² Jordan S. M. and Kiefer E. D. Factors Influencing Prognosis in the Medical Treatment of Duodenal Ulcer. *Am J Surg.* 15: 472 (March) 1932

bleeding recurred within two years after medical treatment was instituted. In patients with a history of two hemorrhages before treatment, the incidence of recurrence was 63 per cent within two years. In a five-year follow up of all their patients with duodenal ulcer they found that symptoms recurred in 54 per cent and concluded that gross hemorrhage was one of the chief signs that the ulcer probably would not yield to medical treatment. Repeated hemorrhage therefore, means that the ulcer is likely to be intractable to medical treatment, that it will show little tendency to heal permanently under conservative treatment, and that, consequently, surgery is indicated.

TREATMENT

The immediate treatment of gross hemorrhage from peptic ulcer is essentially a problem both for the internist and for the surgeon, requiring close cooperation between them. By an understanding of the basic principles of therapy, hemorrhage might be controlled in a greater number of cases. Opinion is divided about many aspects of the management of such patients, but experience in the University of California Surgical Service at the San Francisco Hospital has led us to conform, in general, to the following plan:

1 The patient should be kept absolutely quiet in bed and, if shock is present, should be treated accordingly. As complete immobility as is possible should be maintained.

2 Morphine should be given in large enough doses to bring about mental and physical rest as well as to allay gastric peristalsis. It may be used in conjunction with atropine for the first few doses in an attempt to relax the muscularis and inhibit the formation of gastric secretions.

3 Frequent determinations of the blood pressure, hemoglobin and red blood cell count should be made during the critical stages.

4 Food by mouth should be withheld. As long as the patient is ingesting material into his stomach, gastric peristalsis is stimulated and, with the stimulation of peristalsis, permanent clot formation is attained with difficulty. The taking of food likewise stimulates the secretion of gastric juice, which is undesirable. Alkaline powders, however, may be administered. Feeding should be resumed only when there is conclusive evidence that the hemorrhage has stopped and has not recurred for at least forty-eight hours, as evidenced by the increasing blood pressure, the lowered pulse rate, rise in hemoglobin, and the general appearance of the patient. If the hemorrhage has ceased, small feedings may be instituted and gradually increased to a full Sippy regimen.

5 During the first twenty-four to forty-eight hours, parenteral fluids should be withheld in order not to decrease the viscosity of the blood. We give no fluids intravenously, except blood, during the active bleeding phase as the rise in blood pressure may stimulate further bleeding. After the first day or two saline solution with or without dextrose, may be given by subcutaneous infusion or rectal drip.

6 There are many contradictory opinions concerning the values and dangers of the transfusion of blood, and some feel that it is better not to transfuse for fear of raising the blood pressure and causing further bleeding. Though in our series only 5 per cent of the patients who died from bleeding peptic ulcer had received transfusions of blood we recommend this procedure for the

reasons to be set forth. In our patients who died, the average length of life after the onset of bleeding was four and one-half days. In other clinics where transfusions have been used more freely, the average length of life was sixteen days. These comparative figures suggest that many hemorrhages can be controlled by transfusion. Allen and Benedict reported that in their opinion the transfusion of blood aided in checking the hemorrhage far more often than it started bleeding again, they advocated the transfusion of 300 cc of citrated blood when the systolic blood pressure dropped below 70 mm of mercury. Hurst and Stewart agreed that all patients should have the benefit of transfusions when the hemoglobin dropped below 40 per cent. In deciding whether or not a patient requires transfusion after an initial hemorrhage, Lahey estimates whether that patient could withstand another such hemorrhage. If it seems that a second hemorrhage probably would be fatal, the blood stream is replenished at once.

In our opinion, therefore, when a patient continues to bleed after adequate medical treatment, the slow administration of from 200 to 300 cc of blood should be instituted before his blood pressure, hemoglobin and red blood cell count reach a hazardously low level. The beneficial effect on the anoxemia as well as on the mechanism of coagulation outweighs the possible dangers of transfusion. Obviously a suitable donor should be available at all times, as the patient may suddenly bleed considerably while under observation. The use of transfusions during the later stages encourages more rapid convalescence.

7 In our experience, the administration of so-called coagulants, such as thromboplastic substances or calcium, has no effect on the hemorrhage. The administration of epinephrine or astringents by way of a stomach tube probably has no effect if the bleeding is very severe.

8 Gastric lavage during bleeding from peptic ulcer has been advocated by some, but we feel that this should be reserved for those patients in whom the stomach becomes distended by the accumulation of blood clots. The tendency of lavage to break up a fresh clot and provoke further bleeding is too great to justify the use of this measure in a routine way.

If the foregoing regimen fails to stop the hemorrhage and bleeding persists or recurs while the patient is still fasting, we believe that early surgical intervention is indicated.

The prognosis for recovery on conservative treatment is poor in patients who continue to have serious hemorrhage or in whom repeated hemorrhages occur in spite of proper medical treatment (including the transfusion of blood). This is especially true in the patient over 40 years of age. One would like to defer surgery, if possible, in such cases, but it is probable that some form of surgical intervention will be necessary if the patient's life is to be saved.

Judgment of each case on its own merits is essential. The patient in question may have only a 20 to 30 per cent chance of surviving under further conservative treatment. One can reasonably assume that he is bleeding from a large artery, and the longer one waits the less his chance of survival will be. Three patients in our series were operated on too late during the acute bleeding phase—ten days or longer after the onset—with 100 per cent mortality. After from one to two weeks of intermittent or continuous bleeding, trans

fusions afford very temporary benefit and the patient is poorly nourished has a poor coagulating mechanism and is a poor surgical risk. For all these reasons we urge earlier surgical treatment in this type of case.

If operation is done during the phase of acute bleeding a direct attack on the ulcer is advisable in most cases. If the ulcer is in the stomach the vessels on all sides should be ligated and the ulcer sutured, or, if the patient's condition permits it should be excised and gastro-enterostomy performed. In the treatment of duodenal ulcer, excision may be impossible since many of these ulcers are on the posterior wall of the duodenum. Because of the higher incidence there, ulcer of the duodenum should be suspected if the stomach appears to be normal. The operation devised by Allen and Benedict is the procedure of choice when surgery is indicated for bleeding duodenal ulcer during the acute phase. The stomach is transected between clamps at the prepyloric region, and the duodenal end is elevated. The blood vessels entering the ulcer are ligated outside the duodenal wall and the duodenal end is turned in. An anastomosis is then performed between the stomach and the jejunum. This affords the greatest protection against recurrence of the ulcer or subsequent hemorrhage. Suturing the bed of the ulcer in the posterior wall of the duodenum is not practical because of the friability and fixation of the inflamed tissue. It is at such a time that one's surgical judgment must be the deciding factor. Gastro-enterostomies have been done during the acute phase, with cessation of hemorrhage, when attacking the ulcer directly did not seem feasible. In a high percentage of cases in which this method is used, however, recurrence of the hemorrhage takes place.

We feel that, in the case of a first hemorrhage the patient should be given a chance for relief under medical care unless he was following a strict regimen at the time the bleeding began. If hemorrhage recurs, however, surgery is indicated during a quiescent state. Even though transitory healing has taken place and roentgen examination after from three to four weeks of medical care fails to demonstrate the presence of an ulcer, the lesion may recur at the same site. At operation during such a stage, only a small dimple may be seen at the site of the previous erosion.

When the operation for bleeding peptic ulcer is done in the quiescent stage rather than during a phase of active bleeding, the procedure of choice if the patient's condition and other factors permit it is removal of the area around the ulcer by partial gastric resection with anastomosis of the proximal portion of the stomach to the jejunum. This procedure removes the vulnerable portion of the duodenum and brings about such profound changes in the gastric physiology that the mechanical and chemical factors which were chiefly responsible for ulceration are more or less completely and permanently controlled thereby offering freedom from recurrence in the majority of cases. Indirect procedures such as gastro-enterostomy or pyloroplasty are followed by a relatively high percentage of recurrences as well as by the added danger of gastrojejunal ulcer but the operative mortality is relatively low. The direct procedure of partial gastric resection on the other hand carries a higher mortality but a lower incidence of recurrence. Many times induration and inflammatory reaction about the duodenum cause difficulty in its inversion. In such cases it is probably advisable to allow the ulcer to remain and to transect the duodenum proximally, ligate the vessels and per-

form a gastric resection. Surgical judgment of all the factors involved must determine the procedure to be undertaken.

SUMMARY

A study of the cases of bleeding ulcer at the San Francisco Hospital reveals a higher mortality than was previously supposed. Death occurred rarely below the age of 40 years but was not infrequent between the ages of 40 and 70 years. Arteriosclerosis is an important factor affecting the incidence and mortality of this condition. Death from bleeding duodenal ulcer is twice as common as from gastric ulcer because of the higher incidence of duodenal ulcer and its tendency toward chronicity. Repeated hemorrhage shows a rising mortality with each attack indicating that the ulcer is likely to be intractable to medical treatment and hence surgery should be considered. Early direct surgical attack on the ulcer should be considered for the patient in the sclerotic age who continues to bleed from a peptic ulcer while under adequate medical treatment—including transfusions.

Room 111, University of California Hospital

ABSTRACT OF DISCUSSION

DR. S. L. LEDBETTER JR., Birmingham Ala. Dr. Goldman reports 1025 entries of 890 patients with peptic ulcer, and of this number 349 patients (or 38 per cent) entered the hospital because of gross hemorrhage. Of 603 cases in a series in Birmingham of the past three years forty-nine patients (or 81 per cent) were admitted on account of massive hemorrhage thus showing a much smaller percentage than he reports. Dr. Goldman's statistics show that 23 per cent of all ulcer patients entered because of perforation, while 18.5 per cent of the Birmingham patients entered on account of perforation. His records show that massive hemorrhage is much more common than perforation, while our records show that perforation occurs over twice as often as massive hemorrhage. I do not know how to explain this unless it is due to the fact that the type of ulcer seen in our locality is smaller and less extensive. American surgeons visiting abroad report that the type of ulcer seen there is much more extensive and accompanied by more infiltration and inflammation than ulcers seen in this country. The ulcers that I have seen have almost all been small duodenal ulcers with a tendency toward perforation rather than toward hemorrhage. As Dr. Goldman reports 11 per cent of deaths from exsanguination from the records of the San Francisco City Hospital, I was interested in comparing statistics from the private hospitals here with those from our local county hospital. Several of our leading internists have not had a private patient die from massive gastric hemorrhage. During the past three years in our local county hospital twenty patients were admitted with massive hemorrhage with three deaths a mortality rate of 15 per cent. In the private hospitals there was only one death in twenty-nine cases, a mortality rate of 34 per cent. This shows conclusively that the private patient who is receiving adequate medical care is less apt to have a hemorrhage and if he does treatment is instituted more promptly and with a much lower mortality. Only 69 per cent of our cases were admitted to private hospitals on account of hemorrhage whereas 108 per cent of the admissions to the Charity Hospital were on account of hemorrhage. Fifty-four cases (or 29 per cent of all ulcer cases) were admitted to the County Hospital on account of perforation whereas fifty-eight (or 12.8 per cent) were admitted to private hospitals. I am in accord with Dr. Goldman in practically everything he has said regarding the treatment. It is one of complete rest to the individual complete rest to the stomach and transfusions when indicated. As morphine nauseates a fair percentage of persons it is advisable to attempt to promote rest by the use of barbiturates or other sedatives. When there is pain morphine is necessary. Atropine is useful to relax the spasm of the pylorus. In addition to saving life blood transfusion hastens convalescence. With improved resistance the patient is in better condition to withstand possible concomitant disease.

DR. J. WILLIAM HINTON, New York Dr. Goldman's presentation is valuable because he has such a large number of cases. He reports 349 bleeding ulcers in 890 cases, or 38 per cent, with thirty-nine deaths, or 11 per cent mortality. In the Fourth Division of Bellevue Hospital since 1928 we have encountered 100 bleeding ulcers. This covers a bed capacity of 200 patients, with an average weekly admission rate of eighty patients, with 361 ulcers admitted to the whole hospital annually, or ninety ulcers per division each year, with an average of twelve bleeding ulcers for the past eight years. In other words, 14 per cent of our total hospital admissions have shown severe gross hemorrhage. I am, of course, reporting for a city institution, and it is interesting to review the figures that the author shows, in which approximately 25 per cent of the hospitalized patients have gross hemorrhage and 10 are ambulatory patients. That has certainly not been our observation. Since 1928 we have had 761 peptic ulcers under observation in our clinic. Of this number 577 have been ulcers not operated on, of that number only twenty have bled, or 3.3 per cent. These patients have remained under close observation and made a sum total of 14,232 visits. As to the treatment of bleeding ulcers I essentially agree with Dr. Goldman but feel that it is essential to divide the patients into five groups. In the first group are patients who have been under competent medical care. As I have stated, we had only 3.3 per cent in that group. I feel that it is not necessary to operate on these patients with the first hemorrhage. If they have a recurrent hemorrhage it may be necessary, but so far we have had but one patient out of these twenty bleeding ulcers for whom we have advised operation. In the second group are patients who have been operated on for acute perforated ulcer or for chronic ulcer and who have never bled for months or years following operation. In that group we had 12 per cent of our cases. In the third group are patients who have been operated on for bleeding ulcer and who have continued to bleed. Seventeen per cent of our ulcers have been operated on for either acute perforation or for bleeding ulcer and have continued to bleed. We do not operate on these patients unless a definite marginal ulcer can be demonstrated, and that has been done in approximately 20 or 25 per cent. The fourth group is the important group. In that group we have had 14 per cent of our patients and it is here that we have our mortality. These patients with a severe hemorrhage have never had any ulcer symptoms at all until they collapsed as a result of the hemorrhage. Of these we have had nine deaths. All the patients were treated by conservative measures, and I should like to state that their condition was so extreme, or they died so rapidly, so soon after entering the hospital, that surgery could not have been undertaken if one had so desired.

DR. LEON GOLDMAN, San Francisco As far as the occurrence of perforation with hemorrhage is concerned, especially in the duodenum, one may conclude that, if the ulcer is in the posterior wall of the duodenum, hemorrhage may occur because of anatomic reasons. It is on the posterior wall of the duodenum that the large vessels are found, namely, the branches of the hepatic artery which supply this part. The anterior wall is flexible and covered by peritoneum, so that an active ulcer which penetrates may perforate into the free peritoneal cavity. A penetrating ulcer of the same type in the posterior wall is more likely to cause hemorrhage. For this reason, perforation and hemorrhage do not very often occur at the same time. I think that a more active policy in the control of bleeding peptic ulcer must be adopted. It was the conception of many of us that death from hemorrhage is very rare. In the study of our cases we were much surprised by the incidence and high mortality of this condition. We feel that if, after giving the patient the benefit of conservative measures, hemorrhage still continues and the patient is above the age of 40 with arteriosclerosis, something more has to be done, otherwise the patient's chance of surviving the hemorrhage is very poor. I do not wish to give the impression that operation should be performed on every patient who enters the hospital with a bleeding peptic ulcer during the acute stage. I do, however, believe that there are certain patients, above the age of 40 and with arteriosclerosis who bleed in spite of what can be done for them medically. If something more active is not done, the mortality rate, which is rather high, will continue to be so.

THE RELATION OF THE SANATORIUM TO THE TREATMENT OF TUBERCULOSIS

LEROY S. PETERS, M.D.

ALBUQUERQUE, N. M.

With the discovery of the tubercle bacillus in 1882, the world expected tuberculosis as a disease affecting mankind had been as effectively conquered as had small pox after the introduction of vaccine by Jenner. Dr. Trudeau had sought the Adirondacks, where he proved at least that his life was not to be snuffed out in the twinkling of an eye and later established the Cottage Sanatorium for the treatment of tuberculosis. Here he proved by the trial and error method that rest plus good food and fresh air could arrest the disease in a fair percentage of cases. He learned in the school of hard knocks what is common knowledge today but lived to give all who came after him a comprehensive knowledge of the disease and the fundamentals in its treatment.

Climatic treatment of tuberculosis had been empirical up to this time, and patients had been advised to change climates as far back as records can be traced. Mounts, seashore and deserts all had their day, but it was Dr. Trudeau's experiment in the Saranac Lake section that started the country on a sanatorium-building period which ultimately placed sanatoriums in practically every state in the union.

EARLY DAYS OF SANATORIUM TREATMENT

The Southwest and Western seaboard saw the majority of private institutions built, while the East began the erection of state and later county and municipal sanatoriums. The movement spread like wild-fire and the modern treatment of tuberculosis was begun in earnest. Again we were behind Europe as to priority, but once the movement started we outstripped them in things accomplished. In the mad race to build home institutions climate was forgotten and the slogan "Stay at home and be cured" cut the percentage of climate chasers to the minimum. However, up to the world wide chaos of 1929 those who could afford the luxury of climate still kept the health resorts full to overflowing. Then the crash, and with it the empty pocketbooks. The home institution came into its own. By home institutions I mean the state, county and municipal and not the private sanatorium, that suffered along with its climatic relative. People flocked to the place that made it possible to cure with little or no expenditure of money, and the wails of the private sanatorium owner both east and west mingled in one mighty cry, which still echoes from Maine to California and from Canada to the Gulf. But more about this later. These individuals have a real grievance.

In the early days the sanatorium treatment consisted of rest, good food, fresh air and expert supervision. There was little else to offer a patient. The progress of the disease had to be watched and the prognosis given by what the clinician could gather from physical examination and clinical symptoms alone. The advent of the X-rays and the various laboratory tests for determining activity and the progress in general were yet to come.

Read before the Section on Miscellaneous Topics, Section on Tuberculosis at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

For this reason, namely, close supervision, patients needed an institution and were more successfully treated there, as their regimen was outlined for the entire twenty-four hours and, what is more to the point, some one saw that this routine was carried out. When one asks for an argument relative to the value of sanatorium over home treatment and the questioner has stated that he will follow the same advice on routine at home, tell him it has never been done and that the proof of the pudding is the eating—sanatoriums can boast results that were never dreamed of by home treatment.

My personal experience also bears out this statement. For eighteen years I was directly connected with institutions, most of those years as medical director, and for the past twelve years I have been doing a private practice. For satisfaction from all angles, the institution is far superior. In order to offset partly the disadvantage of private work I attempt to place all patients in the beginning under sanatorium care in so-called open institutions. Here there is nursing supervision and routine is carefully looked after. Still I firmly believe that a sanatorium with a medical director in charge is preferable.

I have attempted to show that in the beginning the sanatorium was a necessity for properly carrying out the rest regimen. Nor has the advent of collapse therapy made it of less value to the patient who has just been given his diagnosis and must be started on his tuberculosis education. Education of the tuberculous is best accomplished in the institutions. There is no more comparison between the sanatorium-educated patient and the home patient than there is between the correspondence school pupil and the student of a recognized university. The one is as handicapped in his fight for continued health as the other in his struggle for economic existence.

COLLAPSE THERAPY AND ITS RESULTS

Collapse therapy has changed the attitude of many specialists in tuberculosis in their relation to the sanatorium. In many cities, patients are given artificial pneumothorax at dispensaries and allowed to continue work in the early months of treatment. The lay magazines are making much of this "new cure" for tuberculosis. Even medical men are carried away by the spectacular results obtained with the inevitable result that the average patient thinks that if he or she can have a pneumothorax needle thrust into the pleural space or a phrenic nerve pulled out, their troubles are immediately at an end and the longed-for cure accomplished.

I realize as keenly as any of my colleagues that economic situations alter cases and that what can be done for an individual in one stratum of economic life cannot be done for one in a lower stratum. Many times a patient comes to my office with barely enough money to buy bread. He has reached the desert, chasing a will o' the wisp, hoping that the dry air will restore a worn out physique and the sunshine contract a cavity which occupies a third of his lung. That man must have something done for him. There are no charitable institutions in New Mexico, but there are people running sanatoriums with the milk of human kindness tugged away inside. I put this patient to bed for a period long enough to collapse the bad lung and let him work. No doubt the dispensary care in large cities I referred to comes under that classification. Something must be done for that type. By collapse therapy we have made it possible for this patient to resume his occupation and,

if the collapse is complete, rendered him no longer a menace to those with whom he may come in contact.

But when we advocate this type of treatment it is because of economic necessity. It is not the ideal in compression therapy. It's a makeshift and must be looked on as such. A collapse of a lung doesn't cure tuberculosis, it merely gives nature a chance to effect a result. It is unfortunate that medicine is penalized and forced into makeshift methods by a society that penalizes human beings and makes it necessary to offer half-way measures to prolong downtrodden lives.

To those more fortunate individuals, time makes for much better end results. They can and should be advised to enter a reputable sanatorium and there under proper conditions the patient has the advantage of study and when this study is complete, sane advice can be given as to methods of treatment. It may or may not be some form of collapse but if collapse it is, continued residence in the institution of choice makes for a successful outcome.

I have spoken of pneumothorax and I think hinted at phrenic exeresis but have not touched on thoracoplasty, which brings us to major surgery and therefore calls for a discussion of the properly equipped sanatorium for all types of collapse treatment. The institution of early days needed a well appointed kitchen, an attractive dining room, a recreation hall and units for the accommodation of patients. Perhaps an infirmary could be found in a few if one searched long enough. A laboratory was a necessary adjunct for the routine examinations, later, x-ray machines became a necessity, but until recent years many plodded along with meager equipment. Now if an institution gives the best that is possible in the care of the tuberculous it must add a surgical unit or have access to a general hospital in a relatively short distance from the sanatorium grounds, so that the close cooperation between surgeon and tuberculosis specialist may exist, for this relationship or lack of it spells many times the difference between success and failure.

Where surgical units or access to nearby hospitals are lacking it becomes necessary for the patient to travel long distances and to be placed in the hands of a surgeon who knows nothing of the individual except that some doctor wants his ribs removed. In the final analysis the medical man is the one whose judgment prompted the operative advice, and the successful chest surgeon is the man who understands this fact and works in close association with his medical colleague.

PRIVATE SANATORIUMS

I now come to the last phase of this discussion. What of the private sanatorium and its struggle for existence? Where will this struggle end? Unless something is done to meet the situation, the answer is failure. There can be nothing else under existing conditions. The state, county and municipal institutions are taking the private patient at the expense of the privately owned sanatorium. The man who owns his institution should have some protection. He along with the rest of the tax-paying group is helping support the institution that is forcing him into bankruptcy. When these institutions were built it was the opinion of most of us, I believe that they were for the care of indigents or people who could ill afford private sanatoriums. If we were right in this opinion, time has changed the purpose for which they were erected. Now any one can enter these institutions and get away with it. The waiting list is long, and, in many, patients wait months

before there is a vacancy. Often this prolonged wait spells failure to regain health. And yet nothing is done about it.

It all resolves itself into the present-day agitation for lower cost for medical care—a problem which merits careful consideration, another entering wedge for state medicine which is fast becoming a reality in one form or another. Let me digress long enough to say that I have no quarrel with state medicine per se, but I do object to practicing state medicine in a capitalist society. No group should be singled out and legislation enacted to cover that particular group. As long as the profit system exists, doctors should be given the same chance that our government extends to the magnates of industry.

But we are not dealing with economics. Something constructive must be suggested for the private sanatorium owner. In New Mexico we are without a state sanatorium. For years we have recognized the fact that something must be done for the indigent who are residents of the state. Our present plan, backed by the state board of health and all health agencies, is to get a sufficient appropriation through the legislature to place these people in existing institutions. In that way overhead can be cut and empty beds can be filled. It seems to me that by concentrated effort on the part of individuals and associations such as this, some pressure could be brought to bear on all existing state, county and municipal institutions to force them not to accept patients who are able to pay for private sanatorium care. Further, rather than have more expenditure of state money to add beds to already existing institutions, awaken sentiment for such plans as New Mexico is attempting and which is already being done in Colorado, Texas and I suppose other states.

Further than this I have nothing constructive to offer, but I still feel that collective effort by such organizations as ours may in time bear fruit and if such effort proves wasted, the private sanatorium will live only in the memory of pioneer workers in the field of tuberculosis.

221 West Central Avenue

ABSTRACT OF DISCUSSION

DR. ALEXIS M. FORSTER, Colorado Springs, Colo. In spite of Dr. Peters' dark picture, I believe that the best of our private sanatoriums will survive because they offer certain advantages which will not be overlooked either by physicians or by patients. All the factors working against us have now reached the peak. I believe with Dr. Peters that the three chief factors have been the economic situation, the propaganda against climate and the rapid development of chest surgery. With improvement in economic conditions, patients will again seek the advantages we have to offer. There are sufficient doctors still left who recognize that favorable climate together with the essentials of care and treatment do offer the patient a better chance of recovery. Scattered over the country in general hospitals are many orthopedic patients who could derive incalculable benefit from the abundant natural heliotherapy available in the West. I believe that these private institutions must seek a subsidy of some sort. It must be recognized that no hospital can keep up the present high standards of care and treatment with the funds its patients are able to contribute. Those of us who have struggled through these years of adversity ask of our fellows a fair consideration of the advantages we are able to offer. Favorable climate, natural heliotherapy, privacy and close individual care many times may turn the scale. I believe that the private sanatorium with up-to-date medical and surgical equipment and with endowment, public or private, will continue to receive adequate support from the profession throughout the country.

DR. C. M. HENDRICKS, El Paso, Texas. It seems that Dr. Peters' remarks could be divided into two phases, viz., Should a private patient be sent to a private sanatorium? and Can the private sanatorium be saved? I do not believe that any member of our profession would argue against the fact that a sanatorium-trained patient is of less danger to his community than the home-trained patient. There is no substitute for rest in the treatment of pulmonary tuberculosis and certainly this rest can be carried out much more efficiently under the watchful eye of the attending physician in a sanatorium than in the home. Then too comes the question of the greatest good to the greatest number, which means the isolation of every open case. It seems that if we are eventually to win the fight against tuberculosis, we must bend our efforts toward the isolation of the open case as well as the early diagnosis and education of the patient. All three can best be accomplished in the sanatorium. Now what can be done to save the private sanatorium from bankruptcy? I have no quarrel with the tax-supported institutions; they are absolutely necessary and I am for them whenever and wherever they are needed. I think that every physician does, however, have a quarrel with the existing laws and customs under which tax-supported institutions are conducted. Certainly no man should expect to receive sanatorium or hospital care for any disease at the expense of his fellow taxpayers. I know of many tax-supported institutions which admit patients at 5 or 10 dollars a week, the law providing for this regardless of the patient's financial status. The word "indigent" has never been properly defined by law. The first step then toward the protection of private institutions would be to secure as soon as possible a change in the laws governing some of the tax-supported institutions also to assist the state, county and city and reducing their waiting list by having provisions made by these governments whereby the empty beds in private sanatoriums may absorb these patients rather than construct new additions to the already oversized tax-supported institutions and I recommend that you work for a law in each state compelling the isolation of the open case. Today the position of the chest specialist and the private sanatorium should be a warning to all other branches of medicine and surgery.

DR. VICTOR STRONG RANDOLPH, Phoenix, Ariz. I want to say a word on a phase that has been neglected in the discussion of Dr. Peters' paper. I am not financially interested in any sanatorium. I am however interested in chest surgery, and Dr. Peters mentioned the fact that sanatorium treatment has lapsed to some extent because of the advent of collapse therapy. My brief remarks are to this effect. The sanatorium routine and the sanatorium treatment are still the most important feature in the treatment of tuberculosis. And that should be heralded just as the fact has been heralded in recent years that many patients do need collapse therapy early. The sanatorium man today is recognizing that fact. And we as chest surgeons also should point out that the sanatorium routine is important for the preparation of the patient to get him into shape so that he will be benefited by surgery and in addition that the results of surgery will not be effective unless the sanatorium routine is carried out after he has had his surgical treatment.

The Tonic Innervation of the Colon—The alimentary canal may be regarded as having two reservoirs connected by a long tube, the small intestine. The first reservoir, the stomach, receives a large amount of food at one time and discharges it gradually into the intestine where the final stages of digestion occur. The second reservoir, the large intestine or colon, receives gradually the waste material left from the digested food and discharges it at one time. The tonic innervation of the colon is quite as important as that of the other parts. It is provided by nerves belonging to the sacral division of the autonomic system. Stimulation of these so-called "sacral visceral nerves" causes contraction of the muscles of the colonic wall. The extent of distribution of these nerves in the large intestine of man has not yet been determined.—Cannon W. B. Digestion and Health. New York, W. W. Norton & Co. Inc., 1936.

THE OPERATIVE VERSUS THE MANIPULATIVE TREATMENT OF SLIPPED FEMORAL EPIPHYSIS

WITH A DESCRIPTION OF A CURATIVE OPERATION

SAMUEL KLEINBERG M D

AND

JOSEPH BUCHMAN, M D

NEW YORK

The treatment of slipped femoral epiphysis, sometimes called epiphysiolysis, epiphyseal fracture of the hip joint, epiphyseal coxa vara, or osteochondritis of the neck of the femur, is still perplexing and in a state of flux because of the poor ultimate results obtained by the present methods. The literature is replete with end result studies that are, to say the least, discouraging. It is because of these failures that a number of investigators have proposed new methods of procedure. It is not our purpose to enter into a clinical description of this condition but rather to consider certain features of the anatomy and physiology of the hip and of the symptomatology which have a bearing on the rationale that should guide the orthopedic surgeon in his therapy.

ANATOMY AND PHYSIOLOGY

With the approach of puberty several anatomic and physiologic features become manifest. 1 The epiphyseal plate between the head and the neck of the femur changes its position from the horizontal common in childhood to the oblique plane. 2 There is an increased growth activity in the epiphyseal region with a consequent widening of the epiphyseal plate. 3 There is a decrease in the thickness of the periosteum and of the retinacula of Weitbrecht which supports the epiphyseal plate and holds the head firmly attached to the neck. 4 The femoral neck becomes longer and its angle with the shaft is lessened, while its size and the density of bone structure are increased. 5 There is a relative gain in body weight. 6 There is an increase of the general physical activity. The first four enumerated conditions produce a physiologic weakness at the epiphyseal area. The two latter conditions produce an increase in the stress and shearing strain on the epiphyseal area.

When these changes are within normal limits, the balance between the ability to withstand stress and strain and the stress and strain superimposed is maintained and no pathologic disturbance occurs. On the other hand when these changes are beyond normal limits this balance becomes disturbed and pathologic changes occur. Thus, if the plane of the epiphyseal line is so oblique as to be almost vertical or the thinning of the periosteal attachment of the femoral head is greater than normal, the ability of the parts to withstand normal stress and strain is reduced. Then too, if the rate of growth between the head and neck is abnormally fast, the epiphyseal plate would be wider than usual and consequently weaker and less able to withstand the usual superimposed forces. Furthermore, an unusual increase in body weight as in cases of endocrine dyscrasia (the obesity in cases of Fröhlich's syndrome) or excessive physical activity would impose a greater degree of stress and strain than the part can withstand. Finally, there may be a combination of these two groups of factors to produce a disturbance of the balance of opposing forces.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

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In the mechanism of the displacement, actual slipping of the femoral head may occur in one of three ways. It may be very gradual over a considerable period, may be very sudden, or may be gradual and then be completed by rapid displacement. The sudden slipping may have all the appearance of a fracture of the neck of the femur, but we cannot accept it as such for, as Mr Perkins¹ has pointed out, a fracture dislocation of an epiphysis always involves the metaphysis at one point or another. Furthermore Rammstedt² found experimentally that in producing a traumatic epiphyseal separation a fragment of the neck was broken off with the head. In the condition under consideration, the lesion is entirely through the epiphyseal plate.



Fig 1.—Section of epiphyseal plate ($\times 125$) showing mild changes from normal. *a*, the line of demarcation between cartilage and bone is relatively straight but definitely more irregular than normal. *b*, the columnar arrangement of the proliferating cartilage is only relatively normal. *c*, resting cartilage is well preserved. *d*, area of resting cartilage undergoing changes. *e*, split in resting cartilage invaded by blood vessels from metaphysis. *f*, fiber bone formation.

GROSS AND MICROSCOPIC PATHOLOGY

The gross pathology observed during an arthrotomy is definite and characteristic. The slipping of the head occurs downward and backward. The epiphyseal plate is wedge shaped with its base anteriorly and superiorly. The femoral head is firmly fixed to the neck and can be removed only by instrumentation. There is no line of solution of continuity. One gets the impression of a gradual wandering of the head downward and backward, resulting from a plastic change in the epiphyseal plate. The femoral neck bulges and appears longer.

1 Perkins, George. The Treatment of Adolescent Coxa Vara. Brit. M. J. 1: 55 (Jan 9) 1932.
2 Rammstedt, Conrad. Ueber traumatische Lösung der Femurkopfeiphysse und ihre Folgeerscheinungen. Arch. f. klin. Chir. 61: 559, 1900.

anteriorly and superiorly. The periosteum in this region is markedly atrophied. The articular cartilage is normal in appearance. Anteriorly and superiorly, however, the border of the epiphyseal plate articulates with the acetabulum so that there is an incongruity of articulating surfaces. The ligamentum teres may be elongated and when sectioned is practically avascular or so poorly vascular that it never requires ligation. The acetabulum is normal in appearance. In old cases the capsule of the joint is thickened anteriorly and superiorly. The joint fluid is normal in appearance and in quantity.

A review of the resected epiphyseal areas, in which we were kindly aided by Dr. Sheldon Jacobson of the department of pathology of the Hospital for Joint Dis-

product of the ossification of connective tissue cells. Occasionally one may note areas of myxoid degeneration in this region. The osteoid tissue at the line of junction with the proliferating cartilage cells is irregularly disposed, and the newly formed lamellar bone is similarly irregularly disposed and in part replaced by fiber bone. The adjacent marrow in the femoral neck presents a moderate amount of fibrosis. Occasionally cartilage rests may be seen in the metaphyseal region.

In the moderately advanced stages the line of junction between the growing cartilage and newly forming bone, though still perceptible, is very irregular. The columnar arrangement of the proliferating cartilage cells is all but lost. The "resting" cartilage zone is poorly preserved. The newly formed bone is fairly well calcified and arranged in irregularly disposed trabeculae of fiber bone. Endochondral (normal) bone formation seems to be at a minimum. The fibrosis of the marrow is now increased.

In the severely advanced stages of this disorder the architecture of the growth zone is very confused (fig 2). The normal characteristics of the cartilage bone contact zone are entirely lost. The cartilage plate is very irregular and badly preserved and presents more increased areas of fiber bone and myxoid degeneration. From this zone, large irregularly shaped tongues of more or less degenerated cartilage extend into the bone zone. The arrangement of the newly formed bone trabeculae is confused and presents little of the normal topography. Endochondral bone formation is entirely replaced by the formation of fiber bone which is undergoing very active transformation. There is active osteoclastic resorption and osteoblastic deposition with a formation of large sheets of lamellar bone and osteoid. There are areas of localized bone necrosis while other areas present large dilated engorged blood vessels. The marrow is completely fibrous. The impression one gets is that of a completely chaotic arrangement of normally functioning cells interspersed here and there with areas of necrosis and areas of hypervascularity.

CURRENT FORMS OF TREATMENT

With these considerations in mind, one may analyze the various forms of treatment in vogue. There are several conservative methods of treatment of the slipped femoral head, but these concern themselves with the preslipping or very mild slipping stage. Rest in bed with interdiction of all weight bearing will in most instances produce excellent results. One must, however, bear in mind two considerations: that a sudden or gradual slipping may occur even in bed and that the period of rest in bed must extend over several years until the femoral head is definitely fused to the neck. The same considerations hold true for those mild or preslipping cases treated with plaster-of-paris spica immobilization, with traction, or with weight bearing on a well fitting Thomas hip brace.

The manipulative treatment as devised and advocated by Whitman is based on the assumption that this condition is in reality an incomplete fracture of the neck of the femur. The exciting cause of displacement is apparently a superficial fracture at the superior portion of the junction of the head and neck, or possibly a less direct injury that weakens the immature bony structure on the diaphyseal side of the cartilage. Then follows gradual downward and backward displacement of the head on the neck.³ His primary indication for treat-



Fig 2—Section of epiphyseal plate ($\times 125$) showing most marked changes: a the normal characteristics of cartilage and the bone contact zone are entirely lost; b area of myxoid degeneration of cartilage; c area of fiber bone in cartilage plate; d split in cartilage plate; e lamellar bone. Note absence of columnar arrangement of proliferating cartilage and absence of endochondral bone formation.

eases, revealed a changing microscopic picture, which varied with the severity of the lesion. In the early stages (fig 1) the line of demarcation between the cartilage and bone is relatively straight but definitely more irregular than normal. The columnar arrangement of the proliferating cartilage cells is evident but irregular and the number of cells per column is diminished. The "resting" cartilage is fairly well preserved and presents splits, some of which are invaded by blood vessels from the metaphysis while others are filled with granulation tissue. In other views one may see areas of fiber bone and osteoid surrounded by "resting" cartilage. This may be interpreted as a reparative process in the splits noted in the "resting" cartilage and the resulting fiber bone is not lamellar but is the

³ Whitman, Royal. *A Treatise on Orthopaedic Surgery*, ed. 9. New York: Lea & Febiger, 1930, p. 629.

ment is therefore to utilize natural leverage to reduce the deformity. The limb is manipulated into extreme abduction and internal rotation, thus utilizing the impingement of the greater trochanter against the upper rim of the acetabulum as the fulcrum and the capsule as the force acting on the displaced head to produce a reduction of the deformity.

The results of this method of treatment have on the whole been unsatisfactory, as is evident from the many statistical reports.⁴ In mild slippings perfect reductions do not result from these manipulations, even in those instances in which the postoperative x-ray studies show apparent correction of the deformity. The satisfactory appearances are illusory and the results of marked internal rotation, for subsequent x-ray studies in the same position as those in the preoperative studies show that reduction does not occur. This has been pointed out by Mau⁵ and is well exemplified in our case 1. Key⁴ stated that in advanced cases and in those instances of acute slipping of more than six weeks' duration, manipulation results in the forcing of the neck into the cancellous tissue of the head. Whatever correction is obtained is only apparent, for it is only the result of stretching of the capsule and not the replacement of the head. He further states that with the discontinuance of the fixation the deformity recurs.

In cases in which sudden complete slipping of the femoral head occurs, when treated shortly after the slipping, reduction as a rule is possible by the manipulative method. The early results are usually satisfactory but the late results are often disastrous in that ankylosis or marked limitation of motion supervenes. Later x-ray studies of these cases reveal a diminution of the joint space, irregularities of the outline of the femoral head and evidence of necrosis of the femoral head. In retrospect this is readily comprehensible when the surgeon realizes that no matter how gentle he may be with his manipulations the forces acting on the femoral head are tremendous because of the great leverage exerted through the extremity on a relatively small head thus resulting in considerable trauma to the head. Furthermore, once the reduction is completed, the possibilities for reestablishment of the circulation of the femoral head are rather meager. One must always consider that in a number of instances the circulation by way of the ligamentum teres, if it has remained uninjured as a result of the manipulation, is insufficient for the nourishment of the femoral head. On the other hand, in those instances in which the ligamentum teres is injured as a result of the manipulation, the circulation is in all probability nonexistent. The only other possible source of blood supply to the head is by way of the distal fragment. Thus, of course is shut off by the deranged and excessively thickened epiphyseal plate that remains attached to the diaphyseal side of the neck. Thus, as a result of the various circumstances the possibility for survival of the head uninjured and as a normally functioning part of the hip joint mechanism is rather meager. The truth of this reasoning is well supported by the many end result studies available. The following case is illustrative of the sequence of events here described.

CASE 1—May D. aged 12 years seen by one of us (S. K.) in November 1933, had a typical seemingly mild slipping of the

right femoral head. November 10 the right hip was manipulated under an anesthetic. Considerable force had to be used for it was difficult to overcome the deformity. Despite the use of considerable manual force the attitude of outward rotation was only partially corrected. She was immobilized in a plaster-of-paris spica and was kept in bed in plaster for six months. She was then allowed out of bed walking with the aid of crutches, a canvas support for her hip and no weight bearing. She did not bear weight on the affected limb for sixteen months. Nevertheless there was continuously increasing deformation of the head. At the present time two years after the beginning of treatment, she has no pain, but she has 1 inch (2.5 cm.) of shortening of the limb, a marked limp, and severe restriction of all motions. The last roentgenogram shows great deformity of the head, flattening of its upper surface, and increased density of the head with areas of rarefaction and loss of definition of its articular surface. The upper border of the neck projects upward in the form of a triangular spike beyond the articular surface of the head and even beyond the acetabulum. The articular surface of the acetabulum is irregular in calcification and outline (fig. 3).

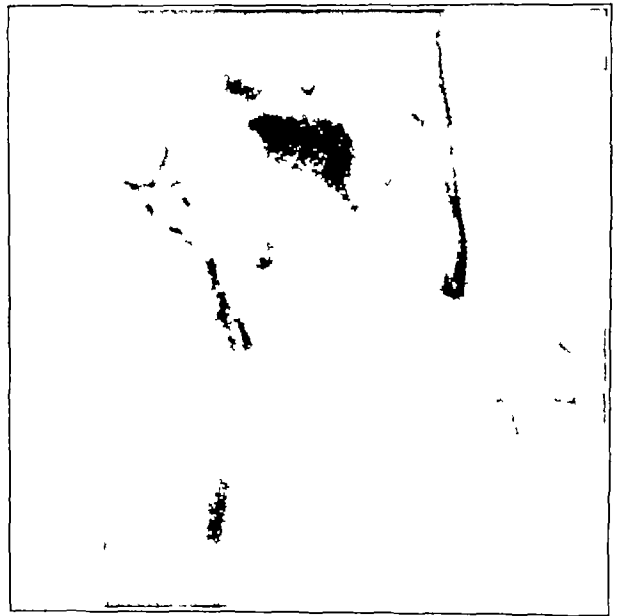


Fig. 3 (case 1).—Deformity of head and neck of the femur and irregularity of outline of the acetabulum and areas of sclerosis and rarefaction of the head and neck of the femur July 2, 1935, twenty months after manipulation.

In cases of marked slipping of prolonged duration, manipulation cannot, on the basis of our operative experience, be effective in reducing displacements, for we have always found the head firmly fixed and displaceable only by means of gouge and mallet. The only possible results of manipulations in this group of cases is the crushing of the head, as is evident from the following case.

CASE 2—Pearl W. aged 13 years complained of a deformity of the left lower limb and difficulty in walking Aug. 25, 1932. She stated that two years previously she fell and sustained an injury. Ever since that time she had had increasing difficulty with the left hip. She was manipulated by a leading orthopedic surgeon and then immobilized in a plaster-of-paris spica for from six to seven months. The result was unsatisfactory. The patient then submitted herself to the care of another orthopedic surgeon who repeated the same routine.

Examination revealed that she was overweight but in good general condition. She walked with the aid of crutches and a caliper brace on the left side and presented a marked limp on that side. The left lower limb was immobile at the hip joint at 120 degrees of flexion and 15 degrees of adduction. There was shortening of 1 inch. A roentgenogram revealed that the

⁴ Key, J. A. Epiphyseal Coda Vara or Displacement of the Capital Fracture of the Femur in Adolescence. *J. Bone & Joint Surg.* 8: 53 (Jan.) 1926.
⁵ Pomeranz, M. M. and Sloane, Marian F. Slipping of the Proximal Femoral Epiphysis. Therapeutic Results in One Hundred and One Cases. *Arch. Surg.* 30: 607 (April) 1935.
⁶ Mau, Zur Frage der Reposition der traumatischen Epiphyseallosung am Oberschenkelhals. *Arch. f. orthop. u. Unfallchir.* 24: 53, 1926.

femoral head was displaced downward in the acetabulum and disconnected from the neck. The upper surface of the neck was displaced upward and was in contact with the upper rim of the acetabulum. The joint space was diminished.

The hip was exposed by one of us (J. B.) through a Smith-Petersen incision. The capsule of the hip joint was found to be immensely thickened. The head and neck were united by thick fibrous tissue. This was severed and the limb was rotated outward. Notwithstanding that the manipulation was gentle, a supracondylar fracture occurred. The femoral head was found to be firmly "frozen" into the acetabulum and could not be budged. The distal surface was therefore curetted and the freshened neck was brought into contact with it. A Steinman pin was then inserted into the supracondylar region. The bone was so soft that the pin was readily passed through the bone without the use of a mallet. The wound was then closed and the limb was immobilized in a plaster-of-paris spica.

The patient made an uneventful convalescence. The end result was an ankylosed hip.



Fig. 4 (case 3)—Slight slipping of femoral head and loss of normal projection at the junction of the upper border of the head and neck, July 17, 1929. The epiphyseal plate is widened, laminated and irregularly calcified and is more oblique than on the opposite side.

This case demonstrates the danger of manipulation and prolonged immobilization in plaster-of-paris spicas. The manipulations produced a traumatic arthritis, which precluded any hope of a mobile joint, while the prolonged immobilization produced a marked atrophy, so much so that a fracture occurred on slight manipulation.

From the foregoing considerations, manipulative treatment in our judgment may possibly be useful and permissible in cases of acute slipping in which the elements of the manipulative reduction are executed deliberately and advisedly with the greatest gentleness. For all other forms the manipulative treatment is inadvisable for the following reasons: 1. The reduction may be impossible. 2. The reduction is often incomplete and illusory. 3. The circulation of the head is likely to be disturbed, as evidenced by late deformity of the head. 4. Traumatic arthritis and even ankylosis may ensue. 5. No change is effected in the pathologic epiphyseal plate.

OPERATIVE TREATMENT

Several operative methods have been devised to attack the deformity at the site of formation. Whitman advised the exposure of the hip joint through an anterior incision and the levering of the head into correct alignment by means of a chisel. The objection to this method is that there is no provision for the removal or the revascularization of the deranged tissue of the epiphyseal plate, which we believe essential to a cure.

Another more conservative operative procedure which has come in vogue for this and other conditions in recent years is that of drilling for the purpose of reestablishing circulation and causing premature ossification of the part. This method is naturally limited to the preslipping or mildly slipping stages. One of us (S. K.) has used this method in several cases with satisfaction. There are two objections to this method: 1. With our present technic one does not know whether the drill holes have actually traversed the epiphyseal plate and entered the femoral head. 2. There is the potential danger of the drill entering the joint, perforating the articular cartilage and introducing osteochondral particles into the joint cavity.

OPERATION ADVISED

It appears to us that successful treatment must include the following: 1. It must be as atraumatic as possible. 2. The deformity must be corrected. 3. The circulation across the epiphyseal area must be reestablished to produce an early fusion between the head and neck of the femur. This can be best accomplished by an operative resection of the epiphyseal plate, realignment and placing in intimate contact the cancellous bone of the head and neck of the femur.

With these points in mind one of us (J. B.) evolved the following technic. Through a Smith-Petersen incision the hip joint is exposed and the capsule is incised crucially. The femoral head is delivered into the wound. The ligamentum teres is disregarded and may be sectioned. The femoral head is then removed *en masse* with a curved chisel proximal to the epiphyseal plate. The epiphyseal plate, which is deformed and wedge shaped, is excised, exposing the healthy bone of the femoral neck. The removed section is wedge shaped, base superiorly and anteriorly. At times the periosteum on the posterior and inferior surfaces of the neck may remain attached both to the head and to the neck so that when the head is elevated it remains attached like a lid. The distal surface of the head is then curetted to remove all remnants of the epiphyseal plate and is shaped to fit the neck. The head is then replaced in the correct position and fixed to the neck by means of an ivory peg inserted through the fovea capitalis. The dislocation is then gently reduced, the capsule is closed with several interrupted sutures, and the wound is closed in layers. The limb is then immobilized in a plaster-of-paris spica in about 30 degrees of abduction, with the patella pointing forward.

The postoperative treatment consists of immobilization for four weeks in the plaster-of-paris spica. This is followed by several weeks in a suspension apparatus to allow mobilization of the hip. The patient is then supplied with a well fitted Thomas hip brace, the utmost care being taken that the weight is borne on the ischial tuberosity, and walking is permitted. No direct weight bearing is permitted until the roentgenogram shows that the femoral head has been completely revascularized as evidenced by smooth, even calcification similar in

density to the surrounding bone. This ordinarily takes about eight months, at the end of which period all restrictions are discontinued.

REPORT OF CASES

CASE 3—Marvin M. aged 12½ years, admitted to the service of Dr. Samuel Kleinberg July 20, 1929, complained of pain in the right knee and a limp on the right side. He stated that two weeks previously he was seized with a sudden pain in the right knee while walking. Since then the pain had been moderate but persistent, while the limp had become decided.

The general physical examination was negative, save that the patient was somewhat overweight and that he walked with a marked right sided limp. The right limb was held in moderate external rotation. Extension at the hip joint was limited at 170 degrees, while all other motions were unrestricted. The right thigh was atrophied three-fourths inch (2 cm).

Roentgen examination of the right hip in external rotation showed a slight slipping of the femoral head with a loss of the normal projection at the junction of the upper border of the head and neck. The epiphyseal plate was widened and laminated and irregularly calcified (fig. 4). Another x-ray examination of the hip made at the same time with the limb in internal rotation did not reveal the slipping noted in the preceding film. The epiphyseal plate, however, showed the same changes previously described.

July 26 the limb was manipulated under deep anesthesia and brought into extreme abduction and internal rotation of 45 degrees.

The postoperative x-ray examination showed what appeared to be a satisfactory reduction. August 21 the plaster was removed and the limb was placed in a suspension apparatus for the mobilization of the hip. Further examination August 25 showed that all motions were unrestricted save extension which was now limited at 150 degrees. X-ray study at that time in external rotation revealed that the femoral head was not reduced and that its position was similar to that in the corresponding preoperative x-ray study. An open reduction was therefore advised.

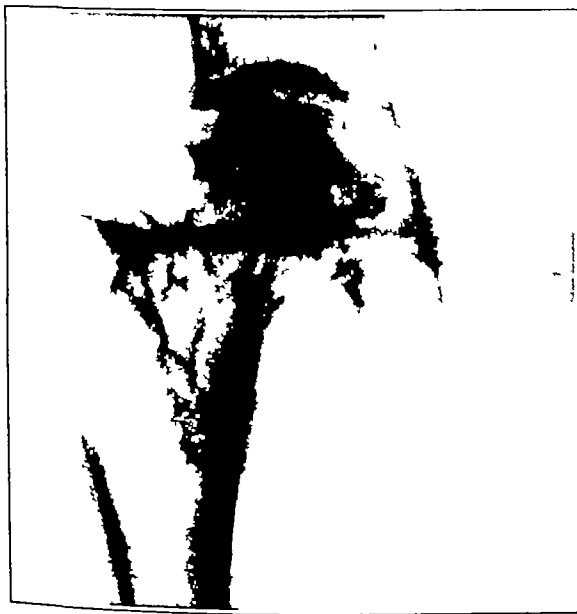


Fig. 5 (case 3)—Perfect alignment and firm bony union of the head and neck of the femur Dec. 11, 1935, six and one-half years after operation. The outlines of the articular surfaces are smooth and the joint space is normal.

August 30 the operation outlined was performed by one of us (J. B.). The patient had an uneventful convalescence. One month later the plaster was removed and the limb was placed in a suspension apparatus to mobilize the joint and physical therapy was administered. Six weeks subsequently, i. e. ten weeks after the operation, the patient was discharged from the hospital walking in a well fitting Thomas hip caliper brace.

Examination at that time revealed a complete range of motion at the hip joint, save for flexion, which was limited at 90 degrees.

The patient was then observed in the outpatient department at regular intervals. Six months subsequent to the operation the patient was permitted to walk without the brace for short periods, which were gradually increased, so that at the end of approximately eight months the brace was entirely discarded.

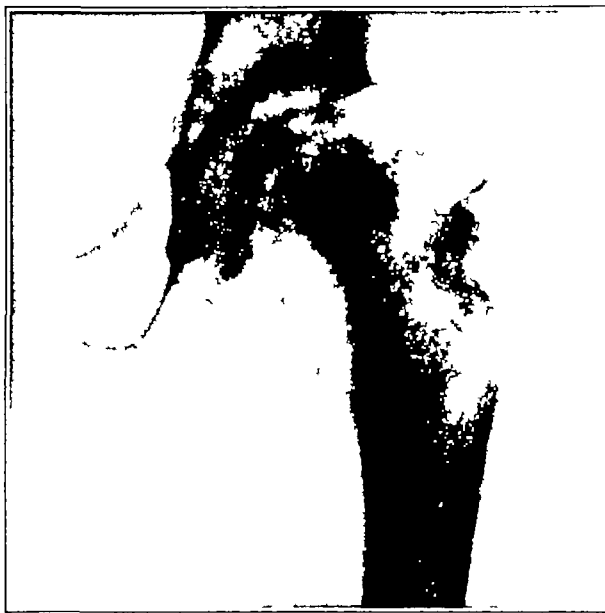


Fig. 7 (case 5)—Slipping of the femoral head April 19, 1933, before operation.

X-ray studies were made at regular intervals. The one made immediately after the operation showed a satisfactory alignment of the head and neck.

A roentgenogram made Dec. 11, 1935, approximately six and a half years after the operation, showed perfect alignment and union of the head and neck. The articular surface of the head was smooth. The joint space was normal. The neck of the femur was normal in size and conformation (fig. 5).

At that time the patient reported that he was leading an active life, indulging in all athletic activities. He was able to run up the stairs three steps at a time and was not conscious of any disability whatever. He had grown 6 inches (15 cm.) since the operation. There was a complete range of motion at the hip joint, save for flexion, which was limited at 80 degrees, and there was no shortening of the affected limb.

This case is of interest in that it demonstrates the illusion of reduction of the femoral neck by manipulation. The postmanipulative roentgenogram in external rotation gives the same appearance as that noted prior to the reduction with the limb in external rotation, while the postmanipulative roentgenogram in internal rotation gives a similar appearance to that taken prior to the stretching when the limb was in internal rotation. This case also demonstrates conclusively that there is no resultant progressive shortening because of the removal of the epiphysis between the head and the neck of the femur.

CASE 5—L. D., a girl aged 13 years, admitted to the Hospital for Joint Diseases in the service of Dr. Kleinberg April 19, 1933, complained of a limp on the left side and pain in the left hip. In August 1932 she fell from a hammock and on the following day began to experience pain in the left hip and a limp appeared on walking. Ever since that time the pain in the hip joint radiating to the knee was aggravated by activity and relieved by rest. The limp was similarly relieved by rest and aggravated by activity.

Physical examination revealed that the child was somewhat overnourished and was in good general condition, walking with

a marked limp on the left side and holding the limb in external rotation. Internal rotation at the hip joint was limited at the midline. External rotation was unrestricted. Abduction was possible to 20 degrees, while adduction was complete. Flexion was limited at 110 degrees and the limb rotated externally on flexion of the thigh. There was tenderness over the femoral head. Measurements revealed a shortening of the left lower extremity of one-half inch and atrophy of the left thigh of $2\frac{3}{4}$ inches (7 cm) and of the left calf of three-fourths inch.

X-ray examination (fig 7) showed that the left femoral head had slipped downward and backward. There was a rarefaction and widening of the upper femoral epiphyseal cartilage.

April 21, 1933, the left hip joint was operated on by one of us (J. B.). All the details of the technic described were carried out.



Fig. 8 (case 5)—Complete bony union with normal calcification joint outlines and joint space Sept. 23, 1935, twenty-nine months after operation.

The postoperative x-ray studies showed a satisfactory alignment of the head and neck of the femur. May 29, five weeks subsequent to the operation, the plaster was removed. Several days later the patient presented a painless range of passive flexion of 150 degrees, abduction of 30 degrees and a free range of internal and external rotation. Active and passive exercises in a suspension apparatus and baking and massage were instituted. A few weeks later the patient was supplied with a well fitting Thomas hip caliper brace and was permitted to walk for short intervals with the aid of crutches. An x-ray study May 29 showed definite evidence of union between the head and neck of the femur. There were in addition resorptive changes in the peg uniting the head and neck of the femur. June 28, nine weeks after the operation, the patient was discharged and referred to the outpatient department.

One month later, June 26, thirteen weeks after operation, there was a complete range of motion and x-ray studies revealed bony union at the operative site. The eight months postoperative x-ray studies revealed that the architecture and ossification of the femoral head were similar to the surrounding bone areas. The patient was therefore permitted to discard the brace gradually. All support was completely removed the thirteenth month after operation. The patient was last seen Dec. 11, 1935, two years and eight months after the operation. At that time she presented a complete range of motion at the hip joint with no limp and no shortening notwithstanding the fact that she had grown 5 inches (12.7 cm) since the operation. X-ray studies, September 23, 1935, showed complete union of the capital epiphysis to the neck of the femur (fig. 8).

CASE 7—Vette G. aged $8\frac{1}{2}$ years consulted one of us (S. K.) Aug. 8, 1934, for a right limp. Three and a half months previously while she was standing on the rear plat-

form of a car, the train started suddenly and she was twisted on her right lower limb. She began limping immediately thereafter. More recently she had a fall which increased the limp and disability. The examination showed that the right lower limb was fixed in flexion of 140 degrees and there was marked outward rotation. There was tenderness to pressure over the front of the hip and severe muscle spasm. A roentgenogram (fig. 9) showed a marked downward slipping of the femoral head.

She was operated on, August 9. The typical operation was performed. A postoperative x-ray examination, September 24 (fig. 10), showed an excellent alignment of the head and neck. The last roentgenogram made on March 22, 1936, shows fusion of the head and neck with a slight residuum of rarefaction of the upper part of the head, indicating that the femoral head is not as yet completely revascularized and reformed. Clinically the patient presents complete extension, 135 degrees of flexion, 40 degrees of abduction and free rotation. There is no shortening of the limb. She is still under treatment. Weight bearing has not as yet been allowed. It is believed that during the next few months when weight bearing is to be resumed there will be a more complete reformation of the head.

This patient was for special reasons immobilized in plaster for about six months and subsequently was allowed up with crutches without weight bearing. This was complicated by a sudden slipping of the femoral head on the opposite side, necessitating further restriction of weight bearing incidental to the treatment of that lesion. It is believed that the lack of physiologic stimulus resulting from walking on a Thomas hip brace is responsible for delayed reformation of the head.

The philosophy of this operation is based on the assumption that the described approach is the most atraumatic procedure possible, for there are no blind stretchings or manipulations. We further look on the replaced head as a free graft which must be given sufficient time to be revascularized. The approximation of the healthy bony distal surface of the head to a healthy bleeding proximal surface of the neck gives the greatest opportunity for the most rapid healing under the given circumstances. It is because of this that we are most emphatic that there must be no direct weight bearing until the femoral head has been completely reformed, as indicated by repeated x-ray studies. The course of treatment lasts approximately eight months to one year and is well worth the time and effort, in view of the practically perfect result obtainable as shown in our case reports.

CONCLUSIONS

Our experiences and studies of the management of slipped femoral epiphysis have led to the following conclusions:

1. Slipped femoral epiphyses are not fractures in the ordinary sense and therefore cannot be treated as such. This is supported by theoretical considerations as well as by clinical observations.

2. Treatment to be effective should be atraumatic, should correct the deformity and should establish a thorough circulation between the head and the neck of the femur.

3. Treatment in the preslipping or mildly slipping stage may be expectant and should consist of interdiction of weight bearing over a long period of time by rest in bed, preferably, or, if that is impracticable, by the use of a well fitted Thomas hip brace. The proviso must however, be made that further slipping may occur notwithstanding these measures. In this stage extra-articular drilling of the head and neck may be effective.

4. The most effective treatment for slipped femoral epiphysis as well as those cases in the preslipping stage is an operation which assures rapid and permanent healing by the removal of the epiphyseal plate and the direct

contact of the cancellous bone of the head and neck of the femur securely fixed by a bone peg

5 The operation described has been used in five cases with uniformly good results

1 West Eighth-Fifth Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH BUCHMAN, New York I have very little to add, save to emphasize that one must be extremely careful in using this mode of attack that no direct weight bearing is borne until the head is completely revascularized and its structure has been replaced by new bone. Otherwise a traumatic arthritis will develop and a limitation of motion will occur. The operation is based on the principle that by removal of the epiphyseal plate healthy bone is approximated to healthy bone and thus good healing is assured. We regard the head as a free graft and protect it as such from weight bearing. Only under these conditions will one be able to get more satisfactory results

ROENTGEN THERAPY OF SOME INFECTIONS

FRED M HODGES, M.D.

AND

R. A. BERGER, M.D.

RICHMOND, VA.

It is our intention to present this paper not as a statistical analysis of a group of infections but as the report of accomplishments and conclusions obtained through seventeen years of experience and observations in the management of various infections.¹ It is hoped that this will bring before the medical profession and emphasize again that irradiation offers a potent ally for proficient and competent treatment in certain infectious states.

A survey of the literature relating to infections and irradiation may be found dated within six years after the discovery of x-rays by Roentgen. In the past twenty-three years numerous writings voice the opinions, theories and enthusiasms of writers both on this continent and abroad. Yet, with a firm theoretical basis and an absence of empiricism, one finds the use of roentgen rays sadly lacking in cases in which they might be of considerable benefit to the afflicted. Careful analysis of this situation discloses the fact that the use of radiation is employed where the radiologist is the best informed in this work and where he has familiarized practitioners in the other branches of medicine with this valuable therapeutic agent in many infections. To offer the patient the utmost that irradiation will give there must be complete and absolute cooperation between the co-workers. The radiologist must share in the responsibility and cannot expect to obtain results if he merely sees the patient gives a treatment and puts the record of the therapeutic dose in the files to forget from that moment such a patient has been treated by him. Prudent and careful observation we believe is the determining factor between success and failure of irradiation in the following acute subacute and chronic more or less localized infections.

We have arbitrarily grouped various lesions in two classes. These are not compiled according to etiologic or pathologic criteria but are collocated in accordance with their sensitivity or susceptibility to irradiation, complying with our observations and experience.

GROUP 1

- 1 Early localized erysipelas in adults
- 2 Furuncles and furunculosis
- 3 Granulomas
- 4 Infected hemangiomas
- 5 Cellulitis of certain types
- 6 Lymphangitis of certain types
- 7 Mikulicz's disease
- 8 Parotitis
- 9 Rhinophyma

GROUP 2

- 1 Carbuncles
- 2 Blastomycosis
- 3 Sporotrichosis

Group 1 comprises those infections which are sufficiently amenable to irradiation so that we feel no other form of therapeutics is necessary. The lesions under this classification respond so readily that one may predict an immediate amelioration or abortment, followed by rapid regression and healing.

Erysipelas chiefly the early localized form in the adult, is a commendable example. In this condition irradiation may be considered as a specific. Small early lesions are apt to disappear within twenty-four hours after treatment requiring no additional therapy. The temperature and toxicity are rapidly alleviated, while the edema and the erythema subside quickly leaving a wrinkled and exfoliating skin in from thirty-



Fig 1—A extensive erysipelas involving most of the face. This lesion was twenty-four hours old having started on the left side of the face. The patient received treatment April 19, 20 and 21, 1936. B appearance on discharge April 22 entirely well.

six to forty-eight hours. The dose required is small from 100 to 150 roentgens (in air) with a voltage of 85 kilovolts of unfiltered rays. Administering this dose well beyond the apparent border of the lesion will prevent further streptococcal permeation of the corium.

Furuncles and furunculosis likewise lend themselves very favorably to the influence of properly applied roentgen rays although in this instance the invading organism is most frequently a staphylococcus and the natural barrier is more apparent being evidenced by the induration around the involved hair follicle or sweat gland. The early undeveloped lesion may be

¹ Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1. Hodges, F. M. The Roentgen Ray in the Treatment of Carbuncles and Other Infections. *Am. J. Roentgenol.* 11:442-444 (May) 1924. The Roentgen Ray in the Treatment of Local Inflammations, Cellulitis and Carbuncles. *J. A. M. A.* 55:1292-1294 (Oct. 24) 1925. The Roentgen Ray in the Treatment of Certain Localized Infections. *South. M. J.* 19: 857-858 (Dec.) 1926. Treatment of Mikulicz's Disease. *Id.* 28: 705-709 (March) 1935. Roentgen Ray Treatment of Skin Cancer and Allied Conditions. *Virginia M. Monthly.* 53: 727-729 (Feb.) 1937. The Rationale of Roentgen Therapy in Infections. *South. M. J.* 23: 759-763 (March) 1930. Roentgen Therapy of Certain Infections. *Am. J. Roentgenol.* 35: 145-155 (Feb.) 1936.

completely aborted in from twelve to twenty-four hours by a dose of unfiltered rays sharply delimited to the local area, while the more advanced lesion will have its course hastened to suppuration and drainage. On the other hand the chronic furunculosis so often seen on the back of the neck and in the axilla is best treated by using filtered rays of from 4 to 6 mm aluminum equivalent. Here the pathologic condition lies deeper and the connective tissue is more extensively involved. The treatment must be directed at the deeper lying lesions and at the same time toward the newly forming ones. A 125 roentgen, 125 kilovolt, 6 mm aluminum application at weekly intervals over several weeks has given almost uniformly good results.

The pathologic characteristics of infected angiomas and granulomas make them difficult to treat by other methods, especially when they are situated, which they so often are, where good cosmetic and functional results are desired. Where other forms of therapy have failed

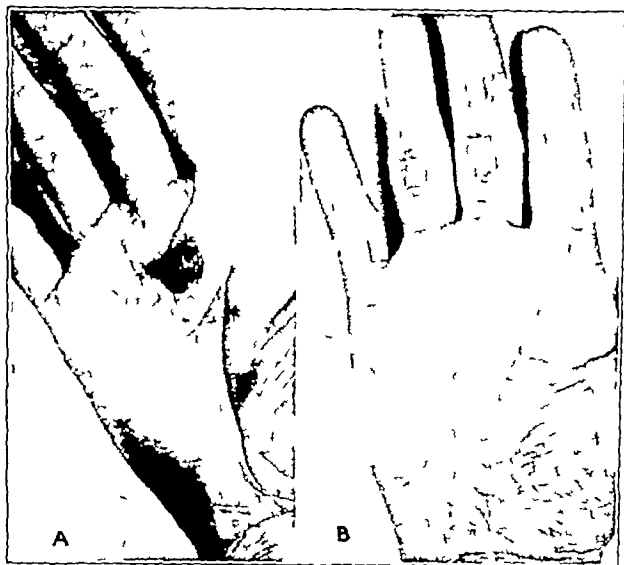


Fig 2—A granuloma treated June 10 and 12 1935. B patient seen again nine months later having no recurrence. The scar is soft and there is no evidence of contracture.

irradiation has obtained admirable success. The abundant overgrowth of vascular and cellular tissue forming the tumor-like mass requires a large dose of from 700 to 900 roentgens of unfiltered rays, following which the lesions gradually regress and disappear within two to four weeks leaving a small, soft and pliable scar. Every single case of this type has responded favorably to roentgen therapy.

Cellulitis of certain types, such as the type seen following an extracted tooth or in instances in which there has been a slight abrasion of the skin and in cases in which no portal of entry or etiologic factor could be determined, yields rapidly to the influence exerted by roentgen rays. The process is limited to the area, the probability of a serious complication is lessened and the reparative process is hastened. The lesions either point rapidly and discharge or gradually subside without evidence of drainage by small doses of from 100 to 150 roentgens of unfiltered rays.

Lymphangitis of certain types regress quickly after they are subjected to a roentgen beam. The red streaks that one sees extending up an extremity radiating from a localized infected area usually disappear rapidly. In the later stage in which the lymphatic channels are rigid

and cordlike, with enlarged glands along the course of the system, these can as a rule be made to regress with small doses. When there is not a more or less rapid response to this treatment, of course other measures, such as blood transfusions from a normal or immunized donor or serums, should also be used by a consultant thoroughly experienced in this field.

Mikulicz's disease proper, due to a chronic inflammatory process of the lacrimal and salivary glands, responds more or less permanently to proper roentgen therapy. Differentiating the true Mikulicz disease from the Mikulicz syndrome is often difficult. The latter will also respond to therapy if its pathologic basis is due to one of the blood dyscrasias, such as leukemia, or is a manifestation of a malignant lymphoma, but the results are not permanent. Mikulicz's disease proper to be successfully treated requires larger doses than other inflammatory processes, because the pathologic picture is that of considerable connective tissue production infiltrated by lymphocytes and giant cells plus epithelial degeneration. The most effective dosage ranges around 400 roentgens, 200 kilovolts, 1 mm of copper and 1 mm of aluminum.

Parotitis, frequently seen as a complication of surgery of the lower part of the bowel and in patients requiring the presence of jute tubes and tube feedings, usually having a mortality of between 35 and 60 per cent, may have this mortality rate markedly lowered, and the percentage going to suppuration is far less. Whether one uses radium as reported by Rankin and Palmer² and Desjardins³ or the technic of roentgen irradiation that we employ the results are very gratifying, especially when one treats a very sick patient one day where the outcome appears hopeless and finds the same patient the next day sitting up in bed enjoying a meal and talking with his relatives.

In the chronic form that has persisted for months at a time and during which interval there have been numerous exacerbations and drainages, our results have been almost invariably good. In this condition it is not necessary for the patient to undergo repeated incisions with the production of numerous visible scars, and it is not necessary for the surgeon to undertake a difficult operation for the removal of the involved gland, as a series of filtered roentgen rays will produce the desired results, inducing a final result which is satisfactory to the physician and very gratifying to the patient.

The proof of the effectiveness and the ability of irradiation to produce results is readily demonstrated in infected rhinophyma. The pathologic nature of the lesion makes it difficult to manage by other means because the process consists of hyperplastic epithelium, ramified by a number of blood vessels and deeply situated infected glands. The appearance of the individuals and the obnoxious odor ostracize them from social and remunerative contacts. The lesion invariably responds to 300 roentgens of filtered rays and the final outcome is a nose of normal appearance, exhibiting little or no telangiectatic elements and a smooth natural skin. This entity is an ideal one for the radiologist to demonstrate his puissance, as they are quickly turned over by the clinician and is just as easily subjugated by properly applied roentgen therapy.

² Rankin F. W. and Palmer B. M. Postoperative Parotiditis Treatment Without and With Radium. *Ann. Surg.* 92: 1007-1013 (Dec.) 1930.

³ Desjardins A. U. Radiotherapy for Inflammatory Conditions. *J. A. M. A.* 96: 401-408 (Feb. 7) 1931.

In group 2 we have placed those infections in which we feel that irradiation is an important auxiliary in the armamentarium for the management of these lesions

Carbuncles, although very similar to furuncles except for the extensive nature of the process, do not always respond as readily as furuncles. Irradiation alone in most instances limits the spread of the infection, lessens pain, increases drainage, shortens the course of the disease somewhat and undoubtedly, in our experience, lowers the mortality. We feel very strongly that roentgen therapy in combination with heat, especially poultices, offers more than any other form of treatment.

The early carbuncle, treated with a large dose of filtered rays, will often be completely aborted. Incision is rarely necessary. Extension into contiguous structures is impeded or entirely stopped. Carbuncles in later stages are best treated with small doses of unfiltered rays, repeated at short intervals if necessary.

It is surprising to note how soon after treatment the character of the discharge changes. From a watery and scanty exudate it becomes definitely seropurulent and copious, while the tough fibrous nature of the retained material is altered and the floor of the lesion is readily discerned. At the same time the hard induration softens and the multiple small draining sinuses coalesce, becoming one large abscess cavity in which the material readily loosens from the surrounding tissue to be discharged in from three days to a week, leaving a clean freely discharging wound. It is rarely necessary to employ surgical means to obtain a good cosmetic and final result, as the ultimate outcome leaves a smaller and more pliable scar than could be obtained otherwise.

The dermatomycoses, especially blastomycosis and sporotrichosis are frequently treated favorably and respond well to from 500 to 700 roentgens of filtered rays. Irradiation is supplemented by iodine therapy. On the other hand, many fungous infections of the hands and feet respond admirably to roentgen rays alone, and our best results are seen when the heavier filtration is used. Some radiologists object to the use of the shorter wavelengths on small structures such as the fingers and toes, but where we have failed with unfiltered rays we have been successful with the filtered. Our doses, however, never exceed two thirds of an erythema dose in a single series and therefore we do not feel that we are subjecting the patient to the danger of an obliterative endarteritis or to serious consequences.

COMMENT

Every infection, whether it appears trivial and unimportant or well localized and delimited in the beginning, is a harbinger of potential sequelae such as thrombophlebitis, lymphangitis and pyemia. We feel that irradiation plays an important role in diminishing secondary manifestations of the primary lesion. Rarely have we encountered complicating factors, and we are confident that irradiation has contributed much in preventing them.

Experimental data on laboratory animals have shown that, in lesions in which beginning destruction of tissue is taking place, irradiation hastens the disintegration of the tissue in the process of destruction with earlier and more profuse drainage of the area and more rapid recovery.

The changes produced by irradiation are apparently based on the sensitivity of leukocytes, especially lymphocytes, which is well known to radiologists.

Heineke⁴ has conclusively demonstrated that roentgen rays per se have no subversive effect on pathogenic organisms in culture but that the destructive action which ensues following irradiation is due to a secondary manifestation following the effect of the rays on lymphocytes and leukocytes. In an incredibly short time after subjecting laboratory animals to the roentgen beam he was able to demonstrate lymphocytic changes in direct proportion to the dosage. The phenomenon is characterized by a liberation of chromatin material in the surrounding area. What takes place and what effects follow the manumission of the chromatin is not known. This material collects again and forms in clumps and balls, to be absorbed by adjacent reticular cells and carried away by them as collected material and debris.

Other experimenters suggest the liberation of ferments and the stimulation of antibodies, while some intimate an altered electrocolloidal and metabolic change within the cells.



Fig. 3—A cellulitis on the left side of the face following a slight lesion in the nose. Treated Jan. 18, 1936. B discharged well January 22 when the photograph was made.

Different types of lesions and similar lesions in different stages of development react somewhat differently to roentgen rays. This is demonstrated in early carbuncles, in which we have seen rapid dissipation of the infection with these areas returning to normal without necrosis or drainage. The same effect is seen in erysipelas, while in abscesses and in well developed or late stage carbuncles a rapid breaking down of the tissues occurs with an ensuing copious drainage and early healing. The response of lesions is based on the type of disorder present. Lesions with considerable white cell invasion and small amounts of connective tissue are influenced more readily than lesions with much connective tissue and small numbers of leukocytes.

The technic employed is not empirical, but we are not led by a fixed dosage for a certain lesion. Every case is individualized and treated accordingly. It frequently happens that similar lesions receive identical doses coincidental rather than predetermined. We advocate smaller doses rather than dosages approaching erythemas. Rarely does a lesion receive more than

4. Heineke H. Experimentelle Untersuchungen über die Einwirkung der Röntgenstrahlen auf innere Organe. Mitt. a. d. Grenzgeb. d. Med. u. Chir. 14: 21-94, 1904-1905.

400 roentgens (in air) or two thirds of an erythema dose during a series. The interval between treatments is determined by the lesion and on no other basis. A working rule which is apparently adaptable to most forms of infections may be expressed in the terms of the disorder present, i. e., the greater the lymphocytic and leukocytic infiltration, the smaller the dose with softer x-rays, and the more chronic the condition the larger the dose and the harder the ray.

In cases in which roentgen therapy is an auxiliary in the armamentarium against infection, we insist that if hot dressings are to be applied they be made to fit the lesion and not to include the surrounding area. We feel that the latter produces an unnecessary edema and swelling, especially around the eyes, which can be prevented. When poultices, usually flaxseed, are advised careful instructions are given that the compress shall not be large and cover only the lesion and not extend beyond. Supportive measures are also utilized when necessary to give to the patient as much comfort as possible. Concomitant systemic disorders are treated as necessary by a consultant experienced in the special field of medicine involved.



Fig. 4—A beginning carbuncle on the left side of the neck in a case of chronic furunculosis one furuncle showing in the middle of the neck just below the hair line. Numerous scars are present following previous furuncles. Treated Feb. 26 and 28, 1936. Discharged eleven days later. B after filtered and unfiltered therapy there has been no recurrence of furuncles or carbuncle. In the area of the last carbuncle there is only a slight scar not visible in this view.

We believe that there is no question of the great value of roentgen therapy in certain infections. In our experience clinicians and surgeons have cooperated fully with us in this work. This method of treatment will, we believe, be generally adopted in many infections when the radiologists throughout the country familiarize the general profession in their respective communities with its value.

1000 West Franklin Street

ABSTRACT OF DISCUSSION

DR EDWARD H. SKINNER, Kansas City, Mo. There are only two situations in which I have any additional points to offer. One is with regard to the treatment of hair follicle infections and furunculosis of the nose, ears and arm pits. I have had cases of these types which have responded beautifully just as Hodges and Berger report. It seems to me this is a nice problem for some ambitious young radiologist. Certain tissue studies are required with cytologic evidence, including the career of these tissues following the x-irradiation.

DR F. F. BORZELL, Philadelphia. I believe that certain phases of the present status of treatment of infection by radiology require a word of caution. We are all getting beautiful striking results but we are at the present moment decidedly empirical. Our results in inflammatory conditions may probably be due to certain cellular influences perhaps on the reticulo-

endothelial cells, rather than to any bactericidal effects. This may probably be true in these gangrene cases. It might be well for those who meet an occasional gas gangrene case to use every effort to establish the diagnosis from the standpoint of the organism involved and to make careful clinical records and correlate them. It might be well to refer these records to Dr. Kelly for his continued investigation.

DR J. JAMES DUFFY, Denison, Iowa. In dealing with the type of staphylococcal infections it has been my experience that if one gives a maximum dose the first time one sees them one has much more success. I saw five years ago a case of Ludwig's angina, the patient having a high temperature and the infection in the neck extending down to the suprasternal notch. There was no evidence of fluctuation and no evidence of localization. Hot packs had been used at home. The patient was in a grave condition. The patient was given a maximum dose at about 104 kilovolts and the next day there was a definite localization. It is most peculiar that better coordination does not exist between the roentgenologist and the surgeon.

DR L. R. SANTE, St. Louis. With reference to the administration of a large dose of radiation at a single sitting I would say that I am aware that it does not sound reasonable and that it is not done universally. I got into the habit of doing this primarily because I was called on to treat certain carbuncles that were very rapid in their spread. With a feeling of helplessness I crowded the dose and found that it did no harm at all, and the effect was much more rapid. I am at a loss to understand that and cannot explain it. It has been my experience when the infection is in the fascial planes and not in the skin proper that the effect is not the same; it is less pronounced. This reaction has always occasioned considerable thought. I have on certain occasions obtained cultures of the organism that produced the carbuncle and have found that radiation applied to the organism in culture does not have any effect at all. This of course is a common observation. Why then do the x-rays applied to the organism that is infecting the skin produce a different result? There must be an influence of the rays on the organism, in close intimate contact with the tissue elements and the result must be due to the development of certain substances in the tissue of the skin.

DR W. EDWARD CHAMBERLAIN, Philadelphia. I have used carefully calibrated thimble chambers, calibrated at the particular voltage that Dr. Sante has used, against the Bureau of Standards chambers. It was within 0.1 per cent. With eight minutes, 400 milliamperes, at a distance of 16 inches, it was found that various x-ray tubes vary all the way from something like 160 roentgens up to a maximum of about 400 roentgens more than a hundred per cent variation. The answer is that in this work one must calibrate the beam and must remember that especially with an unfiltered beam the variation from one tube to another is tremendous on account of the wall thickness of the tube. The space charge effects are different but with the unfiltered beam just the changes from one x-ray tube to another make a big difference. I have demonstrated that a carbuncle will get well very much more quickly with a large dose than with a small dose, but there is an element of danger. I have seen two cases of pyemia that were fatal following 600 roentgens over a carbuncle in one case and 700 roentgens in another. I have not seen the development of pyemia when the smaller doses were used.

DR LEO G. RIGLER, Minneapolis. In 1924 Plaitou and I reported a series of fifty cases of erysipelas. It was probably the first list of cases of erysipelas treated with x-rays in this country. We used as a criterion of a good result a drop in the temperature within twenty-four hours after the institution of the x-ray treatment, only one dose being given and that rather a large one. The dose was not carefully measured although we thought we were approaching the skin erythema dose using unfiltered radiation. We used this criterion, the drop in temperature in twenty-four hours and the number of days that the patient had to remain in the hospital as compared to a control series which was entirely unselected. That is we took the previous year's fifty cases. It appeared evident that one single fairly large dose would have a very favorable effect on erysipelas. It was strikingly illustrated by the fact that the temperature dropped in a high percentage of cases in twenty-four hours. Some time later Dr. Walter Ude who

succeeded me at the General Hospital in Minneapolis, felt that certain risks were being taken by using x radiation in large doses and he changed to the use of ultraviolet radiation. Since then they have collected a large series of cases treated both by x rays, ultraviolet rays and, independently, serum. It would appear from a critical analysis of their cases that the results with large doses of ultraviolet radiation were as good as with x rays. The method of choice would certainly be the ultraviolet radiation. It is much more available, the risk is infinitely less, and it is much more easily applied.

DR. SANTE I am aware that the the output of x-ray tubes changes. It is obvious that the thickness of the walls of different tubes makes a difference in output. But after all the biologic effect on the skin of the patient always will remain the ultimate criterion of superficial therapy. For skin dosage my associates and I have found for practical purposes that the ordinary factors are perfectly satisfactory for treatment, once the full output of the tube is established. This is checked up at regular intervals by our physicist. At the City Hospital, where we use a machine constructed for higher voltages, the output is smaller. At St. Mary's Hospital the output is greater, but once the output for a tube is measured it remains fairly constant. After all, dosage measured in this way never varies from 30 to 100 per cent as Dr. Chamberlain's statement might lead one to believe.

DR. ROLLIN H. STEVENS, Detroit I wonder whether any one has had the experience I have had with cervical parotitis. The few cases that I have treated have responded well when treated in the first twenty-four hours. If those cases run much over twenty-four hours, say two or three days, they go on to suppuration and form retropharyngeal abscess and blood infection and the patient dies. The patients that it was possible to treat in the first twenty-four hours got well. I refer to a series of seven cases seen last fall. Our setup previous to this series of seven was 100 kilovolts and 4 millimeters of aluminum, from 85 to 100 roentgens at a dose repeated once or twice every twenty-four hours. In the series of seven cases we used 200 kilovolts, 2 mm of copper and 100 roentgens. We did that, trying to see if there was very much difference in the time factor of treating infections. Of course it probably does not matter whether one uses the short or the long wave, but I do believe that the time consumed in giving a treatment does make considerable difference. We have treated carbuncles in the same way. We have treated them with the long wave and the short wave, with high filtration and low filtration but using only about 100 roentgens, around 80 to 100 roentgens in either case either method of treatment and we find that they seem to do equally well.

DR. WILLIAM H. SARGENT, Oakland Calif I have treated a number of cases of surgical parotitis with x-rays with gratifying results. None of them were treated within the first twenty-four hours and yet none went on to suppuration, even though some of the patients were very ill. One patient with extreme swelling recovered more promptly than some of the less ill ones. The dosage in all cases has been from 200 to 240 roentgens usually given in two doses occasionally three were used, with an interval of from two or three days between treatments. Three millimeters of aluminum filtration was used but 1 mm of aluminum and no filtration has been used with apparently the same results. It has been my impression that in this condition as well as other inflammatory conditions suppuration is the result of the stage of the pathologic process rather than any particular feature of the x-ray treatments. It is no doubt preferable to treat these cases early.

DR. R. A. BERGER, Richmond Va In inflammatory lesions we are not governed by a fixed dose in any single instance. Our doses are usually empirical. We have found however that the more acute the infection the smaller the dose. In carbuncle we employ a small dose rarely exceeding 100 roentgens with either 4 mm. aluminum or no filter at all. Dr. Hodges has found that treating carbuncles with a massive dose, anything approaching a skin erythema, does what he terms "freezing the lesion." After receiving such a dose the lesion usually remains stationary for some time. Although drainage is present it is not of the copious seropurulent type obtained with smaller doses. In acute parotitis we have been fortunate in having no cases go on to suppuration.

THE CLINICAL DIAGNOSIS OF PERI-ARTERITIS NODOSA

MILTON B. COHEN, M.D.
BENJAMIN S. KLINE, M.D.

AND
ANNA MAY YOUNG, M.D.

CLEVELAND

Periarteritis nodosa is more of a pathologic than a clinical entity, and the diagnosis is more frequently made after the autopsy than at the bedside.

Our experience with this condition has led us to the conclusion that it is a manifestation of clinical allergy of so severe a degree that irreversible and destructive lesions occur in the blood vessels and lead to disturbances in the function of the organs supplied by the involved vessels. This opinion is based on the study of the following cases, a review of the literature and an experimental study of induced allergic reactions in man.

REPORT OF CASES

CASE 1—I. M., a woman, aged 25, was admitted to Mount Sinai Hospital complaining of pains in the arms and legs, swelling of the wrist, elbow and knee joints, itchy red spots on the legs and arms and asthmatic attacks. The asthmatic attacks had been recurring at intervals of from two to four weeks winter and summer for two years, the other symptoms had been present for two months.

The past history was irrelevant, as there had been no earlier allergic manifestations and no rheumatic fever.

The family history was positive for allergy.

The patient was thin and asthenic and she appeared to be older than her 25 years. The mucous membranes were pale and showed a slight degree of cyanosis. The eyes, ears, nose and throat showed no significant abnormalities.

The chest was slightly emphysematous in type. The heart was not enlarged, the sounds were clear, there were no murmurs. The lungs were slightly overdistended without evidences of infiltration. Many fine sibilant rales were present.

The abdomen was flat and showed no physical signs of abnormalities of its organs.

The extremities were thin. The wrist, elbow, knee and ankle joints were painful to touch and on motion and were slightly swollen. The skin showed numerous urticarial lesions, many of which were surrounded by areas of hemorrhage. There were also occasional areas of subcutaneous hemorrhage.

Urinalysis revealed a normal urine. The blood contained 12,000 leukocytes and 3,000,000 erythrocytes with 65 per cent hemoglobin. The differential count showed 30 per cent eosinophils. The Kline test for syphilis was negative. The bleeding and clotting time were within normal limits. The stool showed no ova or parasites. X-ray examination of the chest showed only slight overdistention of the lungs with an increase in the bronchial markings.

The provisional diagnosis was bronchial asthma, urticaria, purpura and hydrarthrosis of allergic origin, hypochromic anemia.

During a ten day period of hospitalization the only additional subjective complaint was that of abdominal cramps.

The patient was discharged from the hospital and study from the allergic standpoint was begun. This study revealed positive intradermal reactions to extracts of May fly, house dust,orris root, maple elm and sorrel pollens. There were suspicious reactions to several foods.

While these studies were being made there was a constant increase in the severity of the joint manifestations and the abdominal pain. There was practically no asthma. Within two weeks areas of hyperesthesia followed by anesthesia were present over the peripheral nerve supplies of both arms and legs and foot and wrist drop developed. The patient was readmitted to the hospital where consultations were had with all services that might have been useful. No additional facts

From the Asthma and Hay Fever Clinic and Mount Sinai Hospital.
Read before the Section on Pathology and Physiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

of importance were noted. She died on the eighth day of her second hospitalization without a satisfactory clinical explanation of her condition.

Autopsy revealed innumerable severe inflammatory lesions involving the arteries in practically all the organs and tissues of the body. In addition to edema and cellular infiltration of the wall, most marked in the adventitia many arteries showed severe degenerative and necrotic changes involving one or more

Physical examination on admission to the hospital revealed a waterlogged condition, with areas of purpura scattered over the body surface. Except for chronic infection of both antrums, the head and neck showed no abnormalities. Some enlarged glands were palpated in the axillae. The heart was enlarged in all dimensions, there was gallop rhythm, no murmurs were heard. The blood pressure was 200 systolic and 120 diastolic. There was fluid in the chest and in the abdomen. The liver and spleen were both markedly enlarged.

The urine contained albumin. Blood chemical examination revealed nonprotein nitrogen 40, sugar 90, creatinine 2. The Kline test was negative. Blood count revealed 25,000 leukocytes, 81 per cent neutrophils, 6 per cent eosinophils, 5,230,000 erythrocytes and 90 per cent hemoglobin. The electrocardiogram showed a PR interval of 0.22 second with low voltage. X-ray examination of the chest, May 9, 1934, revealed a left pleural effusion.

The provisional diagnoses were malignant hypertension, cardiac failure, Hodgkin's disease, eosinophilic leukemia.

During an eleven day period of hospitalization there was no significant change in the condition and the patient was sent home, where appropriate treatment for the cardiac failure was continued.

It was at this time that one of us (M. B. C.) had the privilege of seeing him again in consultation with Dr. H. H.



Fig 1—Section of skin under low magnification. Normal reaction thirty minutes after injection of histamine showing congestion, edema and few wandering cells.

coats. The lesions were characteristic of periarteritis nodosa. In places parenchymatous organs and voluntary muscles showed areas of inflammation.

The most severe arterial lesions were present in the voluntary muscles, liver, gallbladder, heart, lung, alimentary canal and kidneys. The spleen, pancreas, adrenals, bladder and internal genitalia showed less severe arterial lesions than the other organs.

CASE 2—L. H., a man aged 31, was seen by one of us (M. B. C.) in consultation with Dr. M. H. Fineberg, Aug. 22, 1932. At that time he had an infection of the upper respiratory tract complicating an attack of bronchial asthma caused by the inhalation of ragweed pollen. He had had attacks of bronchial asthma during the fall hay fever season for ten years. Except for the asthma and the signs of bronchial infection, there were no significant manifestations. The blood pressure was 120 mm. of mercury systolic and 80 diastolic.

In May 1934 the patient returned to Cleveland from his home in New York City. He had not had treatment for his allergy. At this time he presented the picture of marked cardiac failure and was hospitalized. Since the fall of 1933 he had had continuous asthma which began with very marked conjunctival and moderate nasal symptoms. In November he began to have severe abdominal pain, swelling and pain in various joints and purpuric spots in the skin and subcutaneous tissues. Anasarca developed in March 1934.



Fig 2—Section of skin under low magnification. Reaction in a person hypersensitive to ragweed thirty minutes after injection of allergen showing edema, congestion and eosinophil exudate.

Schweid. In view of our experience in case 1 a diagnosis of periarteritis nodosa was made. Biopsy of a tender area in a muscle confirmed this diagnosis.

CASE 3—A. K., a woman aged 27, was admitted to St. Alexis Hospital, Aug. 9, 1934, complaining of pain and cyanosis of the left arm, forearm and hand. The condition began three months before admission with numbness and tingling in both hands. Two days before admission severe pain developed in the left hand and discoloration followed. Coincidental with

the onset of the symptoms in the arms there was an attack of abdominal pain with vomiting. The abdominal symptoms persisted in mild form. There was a loss of 40 pounds (18 Kg) during this three months period. Early in adolescence there had been periodic attacks of typical bronchial asthma, and winter cough with occasional wheezing had persisted. The patient was emaciated. The result of physical examination was essentially negative except for the cyanosis of the

33, who has signs of intermittent claudication and severe abdominal cramps. There is diffuse tenderness in the calf muscles, but as yet no nodules have developed that could be removed for histologic study.

CASES DESCRIBED BY OTHERS

Middleton and McCarter¹ have recently reviewed the literature on periarteritis nodosa and have added to the approximately 200 cases in the literature three of their own. They agree with the generally accepted opinion that, while the disease is of unknown etiology, its occurrence in rheumatic subjects justifies its inclusion among the rheumatic diseases. It is pertinent to this discussion that one of their patients had attacks of asthma. Curtis and Coffee² described a case in which the diagnosis was made ante mortem from a biopsy and was confirmed at the autopsy table. The history of nasal polyps and asthma in this man was considered incidental and was casually mentioned. These authors have charted the symptoms and signs in thirty-eight cases from the literature, including their own. It is significant that four of the patients had



Fig 3—Section of bronchus under low magnification. Reversible allergic inflammation (bronchial asthma): mucus, Curschmann's spirals, leukocytes (many eosinophils) in lumen, leukocytic infiltration of mucosa (reversible).

left hand with beginning gangrene of the thumb and the tips of the index and little finger. The blood count was within normal limits. The urine showed no abnormalities, the serologic tests for syphilis were negative.

A diagnosis of Raynaud's disease was made and a left periarterial sympathectomy was performed. The increase in temperature in this arm was so striking that bilateral cervical sympathectomy was deemed advisable and was performed in two stages a few days later. At the same time the left thumb was amputated and gangrenous tips of the index and little finger were removed.

Within a day or two after the second operation, severe asthma began and one of us (M B C) was privileged to see her in consultation.

At this time the patient was very asthenic. She was in acute status asthmaticus which was not relieved by repeated doses of epinephrine.

A consideration of this case led us to explain all the symptoms on the basis of periarteritis nodosa. Death occurred six hours later from bronchial obstruction. Autopsy revealed the typical vascular signs of the disease.

In addition to these three cases we have seen one case at autopsy in which there was a definite history of a bronchial cough with wheezing and have under our care at the present time an asthenic asthmatic woman, aged



Fig 4—Section of voluntary muscle under low magnification. Reversible and irreversible allergic inflammation (periarteritis nodosa). Degeneration and necrosis of adventitia of artery (irreversible). Eosinophil mononuclear round cell infiltration (reversible).

sufficiently severe asthma to be called to the attention of the clinician in the presence of more alarming and severe symptoms, and two others had cough. This incidence of asthma is well above that in the general population or among hospitalized patients. Very recently

1 Middleton W S and McCarter J C. The Diagnosis of Periarteritis Nodosa. *Am J M Sc* 100:291 (Sept) 1935.
2 Curtis A C and Coffee R M. *Ann. Int. Med* 7:1345 1358 (May) 1934.

Motley³ described a case in a man with severe bronchial asthma. The signs were typical but the significance of the asthma was overlooked.

PERIARTERITIS NODOSA AS A SEVERE MANIFESTATION OF CLINICAL ALLERGY

Our conception of periarteritis nodosa as a severe manifestation of clinical allergy is based on the following considerations:

When cells in the allergic state are brought into contact with an antigen to which they are sensitive, a characteristic reaction occurs. This reaction is vascular in nature and results in the outpouring of fluid into the reacting area followed by the extravasation of leukocytes. Reactions vary greatly in severity, depending on the degree of sensitization of the tissues and the doses of the antigen. Most of them disappear without permanent tissue change. For these we use the term reversible. Some, however, are so severe that tissue death results with healing by scar tissue formation. For these we use the term irreversible. The wheal produced by a skin test is an example of a reversible reaction, the Arthus phenomenon is an example of an irreversible one.

Our studies of the histology of induced allergic reactions in man showed that the body response was the same for all plant and animal foreign proteins and histamine, and that the reaction could be identified histologically if examined between thirty and sixty minutes after its inception.⁴ The reaction represents inflammation in which the predominating cell is the eosinophil. In some of the more severe reactions there were small areas of tissue necrosis. The Arthus phenomenon is merely an accentuation of this reaction in which there are well defined areas of tissue necrosis associated with areas in which ordinary allergic inflammation is present. Allergic reactions then may be entirely reversible or may represent varying degrees of both reversible and irreversible changes.⁵

If one examines sections of the vessels in periarteritis nodosa, one finds lesions which are indistinguishable histologically from those mentioned. There are areas of scarring alone, areas in which there is only reversible allergic inflammation and every conceivable combination of allergic inflammation and repair.

Cases can be classified into four general types:⁶ (1) fever, splenomegaly, leukocytosis, severe anemia, marked emaciation; (2) polyneuritis and polymyositis; (3) renal symptoms; (4) epigastric pain, vomiting and diarrhea. Clear cut types are not seen as often as those in which combinations of symptoms occur, as is well shown in the case histories cited. The most important point in the diagnosis of periarteritis nodosa is to think of the disease. The clinical diagnosis is not difficult to make if the clinician will consider every patient having severe allergy as presenting a potential case of periarteritis nodosa and will watch for symptoms and signs which may be explained on the basis of a temporary or permanent disturbance of the blood supply to any organ. Biopsy of a skin nodule or of a tender area in a muscle will usually confirm the diagnosis, as the histologic picture is characteristic and easily recognized.

10616 Euclid Avenue

ABSTRACT OF DISCUSSION

DR. HENRY C. SWEANY, Chicago: I would like to ask Dr. Cohen and his associates whether they made a search for sensitization in these cases of periarteritis nodosa and whether they were able to connect that up with the formation of this type of lesion. Also, have they any idea of the connection between this type of phenomenon and that described by Dr. Schwartzman?

DR. MILTON B. COHEN, Cleveland: We have had the opportunity to study several of these patients from the standpoint of allergy. They all give reactions to the common antigens or allergens that are usually associated with clinical allergy. We do not feel that this lesion has any direct relation to the Schwartzman phenomenon. Perhaps all these things are types of hyperimmunity or hypersensitivity, but we feel that that is a peculiar and specific one separate and distinct from the type seen in the Schwartzman phenomenon.

Clinical Notes, Suggestions and New Instruments

NECROSIS OF CORD STRUCTURES FOLLOWING THE INJECTION TREATMENT OF REDUCIBLE HERNIA

STEPHEN A. ZIEMAN, M.D.
Clinical Assistant in Surgery, Rush Medical College
AND
T. M. LARKOWSKI, M.D.
CHICAGO

Current literature directs attention to the injection method for the treatment of reducible hernias. The assurance of freedom from complications, simplicity of technic and extra

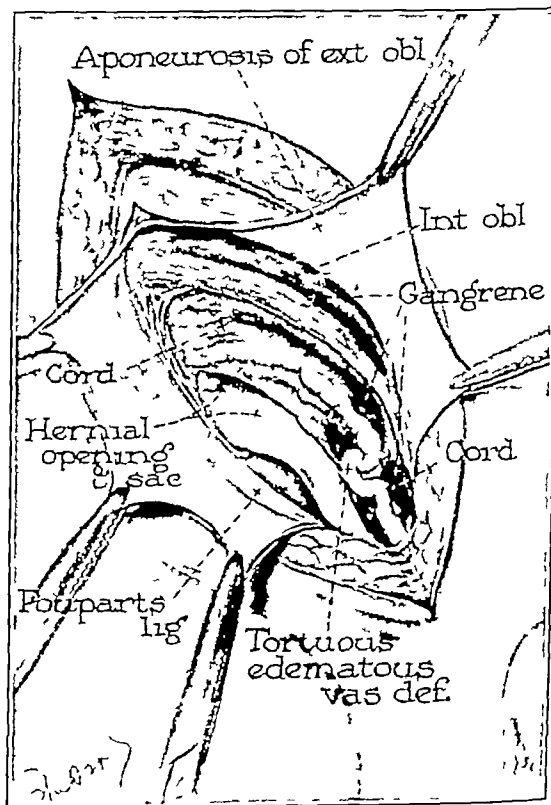


Fig 1—Condition disclosed by operation

ordinarily good end results have stimulated an active interest among the profession.

The following case report however will illustrate what may occur when supposedly innocuous material is injected even by capable hands.

³ Motley, Lyle: Periarteritis Nodosa. J. A. M. A. 106:898-902 (March 14) 1936.

⁴ Kline, B. S., Cohen, M. B. and Rudolph, J. A.: Histologic Changes in Allergic and Nonallergic Wheals. J. Allergy 3: 531 (Sept.) 1932.

⁵ Kline, B. S. and Young, Anna M.: Cases of Reversible and Irreversible Allergic Inflammation. J. Allergy 6: 247-272 (March) 1935.

⁶ Lindberg, Kaj: Ein Beitrag zur Kenntnis der Periarteritis Nodosa. Acta med. Scandinav. 76: 183 (June 12) 1931.

REPORT OF CASE

History—J C, aged 28, an Italian presented himself for operation. The history states that last January while at work he developed a large right indirect inguinal hernia. Gradually becoming incapacitated he was prevailed on to attend a clinic for an injection treatment. One injection of a tincture of

was uneventful and the patient left the hospital in satisfactory condition ten days later.

Pathologic Report—A small section of muscle tissue showed marked degeneration of the fibers and absence of nuclei, with necrosis and beginning gangrene. Other sections showed extensive thrombosis of the blood vessels hemorrhage into the muscle fibers and surrounding tissue with generalized necrosis.

COMMENT

From the foregoing it is possible to learn that the repair of hernias by the injection of materials must depend on destruction of the healthy tissue first and subsequent replacement with fibrous tissue that solutions however apparently harmless may cause considerable destructive damage that thrombosis of the vessels has definitely been observed and proved, that the vas deferens may be pathologically altered, that the pain



Fig 2—Thrombosis of the blood vessels with necrosis of the adjacent tissue elements

thuja solution was given into the region approximating the right internal inguinal ring. A truss had been fitted, and the patient sent home with instructions to return for a second injection. That evening the entire right lower quadrant of the abdomen became discolored. Intense pain developed which radiated down into the testicle. The scrotum swollen and painful confined the patient to his bed and extreme discomfort forced him to discard the truss. Several days passed before he was able to walk. The ecchymosis and swelling having gradually disappeared, he requested operation.

Two weeks elapsed before it was considered safe to attempt surgical repair. Under ether anesthesia, an inguinal incision was made through the presenting structures including the aponeurosis of the external oblique. All appeared healthy. When the fibers of this fascia were separated however, and the canal with its contents exposed, a green, gangrenous strip including fibers of the internal oblique and cremasteric muscles the upper portion of the pampiniform plexus and the greater part of the cord was found. The vas deferens looked blanched swollen and tortuous running directly through the gangrenous appearing spots. The hernial opening situated midway between the internal and external rings as such and adjacent to Poupart's ligament, offered an unusual position for injection. The sac made its exit here, ascending first under the cord structures then laterally following them into the scrotum. A small section of the greenish tissue was removed for histologic examination. The hernial opening was repaired by a purse string suture without opening into the sac. The rent in the transversalis fascia closed and the aponeurosis of the external oblique imbricated above the cord structures constituted the essential steps of the operation. Convalescence



Fig 3—Destruction of the muscle fibers absence of nuclei and gangrene of adjacent tissue elements

and inconvenience are greater than ordinary herniotomy, and that the site of hernias can be mistaken even by experienced men and injection fluid impregnated into healthy tissue.

CONCLUSION

Herein is reported a detailed early picture of tissue changes found at operation immediately subsequent to injection of supposedly innocuous solutions for treatment of reducible hernias.
30 North Michigan Avenue

TUBERCULOSIS AND CANCER

J. K. MILLER, M.D., INGLESIDE, NEB.

A consideration of the interrelation of tuberculosis and cancer presents a mass of contradictory observations. It is generally agreed that tumor cachexia as a nonspecific process will favor the development of tuberculosis, reactivate an old focus or accelerate the course of the disease. However, difference in the age incidence of the two diseases offers little opportunity to exercise such an influence.

That tuberculosis favors the development of cancer is supported by no less an authority than Ewing.¹ In such malignant processes as the leukemias, lymphosarcomas, carcinoma of the



Fig. 1—The malignant cells in the center of a typical tubercle. High power.

lung and epithelioma on a subsoil of lupus vulgaris, it seems highly probable to Ewing that a tuberculous process is often the excitant. Along the same trend is Esperance's work on Hodgkin's disease as an atypical form of tuberculosis. Experimentally, Cherry² has found a greater incidence in mice tumors concurrently inoculated with tubercle bacilli. With the exceptions noted by Ewing, it is still debatable whether tuberculosis is a precancerous disease.

Pearl,³ in a series of 7,500 autopsies, found active tuberculosis twice as frequent in the noncancerous group as in the cancerous class. This greater frequency in the nonmalignant cases is noted also in the necropsy studies of McCaskey,⁴ Landis and Broders. However, it must be recalled that tuberculosis takes its greatest toll before the age of 40 and cancer after the age of 40. Contrary to Cherry's work, Centanni and Rezzesi⁵ and also Teutschlaender⁶ found that tuberculosis hindered the production and retarded the growth of mouse tumors. In general, it is admitted that those organs most frequently the recipient of malignant growths are seldom infected by the tubercle bacillus, a fact observed as early as 1841 by Rokitsky.⁷

Cooper⁸ has collected 247 cases in which the two diseases coexist in the same organ. Carlson and Bell,⁹ from 11,000 general autopsies, find no statistical evidence supporting an antagonism between tuberculosis and cancer. They believe that the relation is incidental. Fischer found that the tubercle bacilli in a tissue culture of Rous sarcoma did not injure the cells that were subcultured many times.

Hueper¹⁰ finds the statistics on hereditary interrelations of cancer and tuberculosis too meager to offer any aid. He observes that the Negro race, while it is especially susceptible to tuberculosis, shows less cancer of the lung than the white

race. Eggers,¹¹ in his review of the etiology of cancer, says "The validity of the relation [tuberculosis and cancer] would appear to be one that can be settled only by continued and comprehensive statistical study."

The following case of concurrent tuberculosis and cancer of the descending colon is reported as an example of a most intimate association of these two diseases. Cooper has collected forty-nine cases in which the gastro-intestinal tract has harbored cancer and tuberculosis side by side. Of these, four were in the sigmoid colon. Hamperl has reported a series of twenty-two additional cases, of which one was in the colon.

REPORT OF CASE

History.—J. W., a white man, aged 62, admitted Dec. 12, 1932, had pleurisy fifteen years previously. The onset of the present illness was in December 1931 with productive cough, dyspnea and a loss of 18 pounds (8.2 Kg.) during the year. He had suffered from constipation for the past five years.

Physical examination revealed emaciation, medium moist rales in both upper lobes and suppression of breath sounds and dullness over the entire left lung field.

X-ray studies during hospitalization showed productive motting throughout both lung fields, with an excavation 6 cm. in diameter of the right upper lobe. Sputum was persistently positive. The diagnosis was pulmonary tuberculosis far advanced.

The patient was under pneumothorax and rest therapy but became progressively worse and died May 26, 1934.

Autopsy.—There was an empyema of the right side of the chest. The lung parenchyma showed a caseopneumonic tuberculosis of both lungs with cavitation of the right upper lobe.

Scattered throughout the terminal ileum and entire colon were infrequent old tuberculous ulcers. In the midportion of the descending colon was a mass measuring 7 by 6 by 6 cm., which partially occluded the lumen. The walls of the colon were from 4 to 5 cm. thick in the region of the tumor mass. The lymph nodes draining this area and the periaortic chain were enlarged, some being 1.5 cm. in diameter.



Fig. 2—Infiltrating cords of cells from the carcinoma of the rectum and two typical tubercles (a, b), one of which contains cancer cells in its center (b and figure 1). Low power.

Microscopic Examination. There was a caseopneumonic pulmonary tuberculosis with associated miliary tuberculosis of the liver, spleen and kidneys. The lymph nodes draining the tumor site showed only typical tubercles.

Section of the colonic mass showed an adenocarcinoma, grade III. The malignant process had invaded the submucosa and muscularis. In one portion, two adjacent tubercles were seen. The one presented the typical histologic features. The center of the other tubercle showed a nest of cancer cells similar to the more anaplastic cells of the main tumor.

1. Ewing, James. *Neoplastic Diseases*, ed. 3. Philadelphia, W. B. Saunders Company, 1928.

2. Cherry, T. *Lancet* 2: 644 (Sept. 26) 1925.

3. Pearl, Raymond. *Am. J. Hyg.* 9: 97 (Jan.) 1929.

4. McCaskey, Am. J. M. Sc. 124: 97, 1902.

5. Centanni, E. and Rezzesi, F. *Riforma med.* 42: 195 (March 1) 1926.

6. Teutschlaender, O. *Klin. Wchnschr.* 8: 1606 (Aug. 27) 1929.

7. Rokitsky, Handb. d. spez. path. Anat. u. Histol. 1.

8. Cooper, F. G. *The Association of Tuberculosis and Cancer*. Am. Rev. Tuberc. 25: 108-147 (Jan.) 1932.

9. Carlson, H. A. and Bell, E. T. *J. Cancer Research* 13: 126 (July) 1929.

10. Hueper, W. C. *Tuberculosis and Cancer*. Am. Rev. Tuberc. 22: 271-285 (Sept.) 1930.

11. Eggers, H. E. *The Etiology of Cancer*. Arch. Path. 12: 93-1013 (Dec.) 1931. 13: 112-150 (Jan.) 296-320 (Feb.) 462-502 (March) 1932.

SUMMARY

Cancer and tuberculosis were found in such intimate relation that cancer cells from an adenocarcinoma of the colon were seen in the center of a tubercle, part of a tuberculous process of the same area. Hueper has observed that some tubercles found in connection with a malignant growth may be pseudo-tubercles of the cancer stroma and that acid-fast bacilli present are nontuberculous saprophytic organisms. However, the presence of a typical tubercle containing Sternberg-Reed cells adjacent to the cancerous tubercle, justifies a claim of true tuberculosis. From the literature, little impression of an antagonism between cancer and tuberculosis is gained and their coexistence appears incidental.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS HOWARD A. CARTER, Secretary

EVEREADY TWO-BED CARBON ARC LAMP, MODEL A-22, ACCEPTABLE

Manufacturer: National Carbon Company, Cleveland

According to the company, the Eveready Two-Bed Carbon Arc Lamp has been designed to meet the need of the small institution where two adults or four children may be exposed to carbon arc lamp radiation at the same time. It is designed to use different types of carbon electrodes thereby producing different types of radiation.

The lamp is automatically controlled, the throw of a small snap switch being required for starting and stopping. It is provided with a motor that brings the carbons together, establishes the arc and maintains uniformity until the lamp is stopped by another throw of the switch. The mechanism for controlling and operating this arc is of the same general principle as that used in the Eveready Professional Model and Solarium Lamps.¹ It is adapted for operation on 60 cycle

115 volt alternating current. A transformer is used to secure maximum arc efficiency from the power supplied; the 10 amperes or 1,100 watts drawn from the electrical supply being converted by the transformer to 25 volts at 40 amperes. The lamp requires 1,100 watts; the transformer efficiency is approximately 49 per cent, under two hours' full load the transformer temperature rise is approximately 40 degrees C.

The carbon holders in this lamp are so arranged that they use copper coated carbon electrodes 6 mm in diameter and 9 inches long. Each trim of carbons lasts about two and

one-half hours in this lamp. Eveready Sunshine C and E carbons can be used, giving erythema-producing ultraviolet and substantial amounts of infra red radiation respectively. At a distance of 42 inches with Therapeutic C Carbons, without filter, a minimum perceptible erythema is produced in about four minutes.

Substantial casters are provided so that the unit may be easily transported from place to place. The heavier parts of the lamp are built into the base, thereby giving it stability. The electrical parts of the lamp are constructed of transformer iron, bronze, stainless steel, copper and other materials suited to the functions of the particular parts. The exterior of the lamp is constructed of stainless steel, polished aluminum and chromium. Doors are provided in which one can place wire screens or filter panels or special glass as desired.

This lamp is offered to the medical profession for use in its professional application of carbon arc lamp radiation in the

general fields of pediatrics, internal medicine, dermatology and a few other specialized fields.

The unit was investigated in a clinic acceptable to the Council. From a physical standpoint it was found to be not unlike the professional model already accepted by the Council. The evidence presented concerning the spectral energy distribution of the lamp was declared acceptable.

The Council on Physical Therapy therefore voted to accept the Eveready Two-Bed Carbon Arc Lamp, Model A-22, for inclusion in its list of accepted apparatus.

PROMETHEUS INFRA RED LAMP PORTABLE MODEL #201 ACCEPTABLE

Manufacturer: The Prometheus Electric Corporation, New York

This unit is recommended for home use on the prescription of a physician. The reflector is 11 inches in diameter and is mounted on a flexible rod that may be adjusted from a height of 35 inches to 66 inches. It has a 13 inch base telescopic tubes and the reflector is chromium plated. The burner is of the refractory type with the resistance wires embedded within the ceramic material.

The physical measurements indicate that it requires about 550 watts to operate the lamp.

This unit was tried out in a clinic acceptable to the Council and found to be reliable.

The Council on Physical Therapy voted to include the Prometheus Infra Red Lamp Portable Model #201 in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LERCH, Secretary

SCARLET FEVER STREPTOCOCCUS TOXIN

(See New and Nonofficial Remedies 1936, p. 388)

Lederle Laboratories, Inc., Pearl River, N. Y.

Scarlet Fever Streptococcus Immunizing Toxin—Also marketed in packages of one 2 cc vial containing 80,000 to 100,000 skin test doses of scarlet fever streptococcus toxin for supplementary treatment of those patients who fail to become Dick negative after receiving the full five dose series of scarlet fever streptococcus immunizing toxin.

SILVER NITRATE (See New and Nonofficial Remedies 1936, p. 421)

The following dosage form has been accepted:

Ampoule Solution Silver Nitrate 1 Per Cent Sharp & Dohme—Solution silver nitrate 1 per cent, approximately 0.2 cc, is contained in ampules composed of beeswax. For use a pinhole is made at one end of the ampule and after suitable preliminary cleansing of the eye two drops are placed in each eye of the newborn.

Prepared by Sharp & Dohme, Inc., Philadelphia, Pa. No U. S. patent or trademark.

HALIBUT LIVER OIL (See New and Nonofficial Remedies, 1936, p. 459)

I V C Halibut Liver Oil, Plain.—A brand of halibut liver oil N. N. R.

Manufactured by International Vitamin Corporation, New York. No U. S. patent. U. S. trademark 314,818.

CASTOR OIL—'Castor Oil is the fixed oil obtained from the seed of Ricinus communis Linne (Fam. Euphorbiaceae).'

U. S. P.
For standards see the U. S. P. under Oleum Ricini.
Actions, Uses and Dosage—See Useful Drugs.

McNeil's Emulsion of Castor Oil (Emulsion Olei Ricini McNeil's)—Castor oil 50 per cent by volume with acacia as an emulsifying agent and sodium benzoate 0.1 per cent as a preservative. Cinnamon is used as a flavoring agent.

Prepared by McNeil Laboratories, Inc., Philadelphia. No U. S. patent or trademark.



Eveready Two-Bed Carbon Arc Lamp

¹ Eveready Professional Model Carbon Arc Lamp Acceptable J. A. M. A. 87:462 (Aug. 15) 1931. Eveready Solarium Type Carbon Arc Lamp Acceptable Ibid. 87:541 (Aug. 22) 1931.

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SATURDAY, NOVEMBER 7 1936

EFFECT OF FAT ON GASTRIC TONUS

The idea that fats retard digestion is an ancient one. Aristotle had evidently observed evidence for this before he expressed the opinion "Now the best digestion is in the bottom of the stomach because the fat descends not there, such as eat fat meat are very sleepy, by reason that digestion is hindered." This observation has been repeatedly confirmed in more modern studies of gastro-intestinal function. The researches of Cannon¹ are particularly clear in demonstrating the delay in emptying time of the stomach following a fat meal, as compared to the rate of passage of food from the stomach after protein or carbohydrate ingestion. The introduction of x-ray technic made it possible to observe, under normal conditions, both gastric peristalsis and the exit of food through the pylorus. Although the earlier studies emphasized the effect of fat on motility of the stomach and on the control of the pylorus, it was soon demonstrated that fat in the duodenum is of profound importance in influencing gastric tonus. In his classic work on hunger, published in 1916, Carlson² observed that oil as well as other substances introduced into the small intestine inhibited gastric hunger contractions and gastric tonus. This observation has been substantiated and expanded, notably by the researches of Ivy and of Lim.³ These investigators have conducted numerous experiments, the results of which are interpreted to indicate that a humoral mechanism is responsible for the inhibition of gastric motility. They suggested that the inhibitory substance is for the most part present in normal intestinal mucosa in an inactive state and that after exposure to oil a certain proportion of the inactive substance is activated. The name "enterogastrone" was proposed for the agent. Intravenous injections of extracts of

this substance, prepared from the upper part of the small intestine, inhibited gastric motility in dogs.

A major portion of the experiments designed to study factors influencing gastric tonus have involved surgical technic of various types, usually applied to the stomach. This is particularly true of attempts to determine the possible importance of a nervous mechanism or of the pancreas in modifying the motility of the stomach. It has been desirable to investigate this question by a method in which the stomach and its nerve supply are undisturbed by any surgical procedures and which produces as nearly normal physiologic conditions in the stomach as possible. This goal has been achieved recently by Waugh,⁴ and his data therefore assume added significance. This investigator worked with trained animals under controlled conditions and by means of fluoroscopic examination determined the time of appearance of the routine barium sulfate meal in the duodenum and the emptying time of the stomach. The preparation of a jejunal fistula made it possible to study the effect of various materials introduced into the jejunum on gastric motility and emptying. Under proper care of experimentation, fairly uniform and consistent results could be obtained for the time required for the barium sulfate to appear in the duodenum and for the period necessary for the emptying of the stomach. Physiologic solution of sodium chloride in the jejunum had little effect on gastric motility and emptying. However, the introduction of fat in the form of undiluted cream into the jejunum immediately produced marked atony of the whole stomach with no peristalsis for periods of from thirty to ninety minutes. This resulted in a considerable delay in the time of appearance of the barium sulfate in the duodenum and in a prolongation of the emptying time of the stomach. A study was also made of the gastric inhibitory action of fat placed in the stomach, and this was found to be much less pronounced than that of fat put into the jejunum. In the latter study, fat administered orally appeared to be without effect until it had reached the upper part of the small intestine.

The experimental results of Waugh permit the conclusion that the site of initiation for the gastric inhibitory mechanism is not in the stomach but in the upper part of the small intestine. The main mode of action is apparently an atony of the stomach with an absence of peristalsis, although an actual closure of the pylorus may also be concerned in the gastric inhibition produced by fat. It seems evident that a similar technic may be employed for the assay of various materials prepared from duodenal tissue and should be of considerable aid in further purification and chemical studies of the apparent humoral agent activated by fat and of importance in the regulation of gastric tonus.

¹ Cannon W B. *The Mechanical Factors of Digestion*. New York, Longmans Green & Co. 1911.

² Carlson A J. *The Control of Hunger in Health and Disease*. Chicago: University of Chicago Press 1916.

³ A summary of the results of research on the subject of gastric motility is given by Lim R K S. *Observations on the Mechanism of the Inhibition of Gastric Function by Fat*. *Quart J Exper Physiol* 23: 263 (Aug 10) 1933.

⁴ Waugh J M. *Effect of Fat Introduced into the Jejunum by Fistula on Motility and Emptying Time of the Stomach*. *Arch Surg* 33: 451 (Sept) 1936.

PROBLEM OF NUTRITION

The committee of the League of Nations¹ formed to investigate the problem of nutrition found the subject too extensive for the presentation of a comprehensive report to the 1936 assembly of the league. The preliminary report of the committee consists of four volumes: 1 An Interim Report of the Mixed Committee on the Problem of Nutrition, embodying the suggestions made by the committee to the assembly and giving a general idea of the problems involved; 2 A report on the Physiological Bases of Nutrition drawn up by the Technical Commission of the Health Committee and forming the starting point of the scientific aspect of the nutrition problem; 3 A Report on Nutrition in Various Countries, which gives the substance of the actual data received by the committee, including the essential portion of the information contained in the replies of certain governments to the secretary-general's circular letter of Nov. 30, 1935, and the available statistical material concerning the consumption of foodstuffs; 4 Statistics on Food Production, Consumption and Prices. The first two volumes are now available. The first volume contains a general survey of the nutrition problem, including some of the latest dicta regarding optimal and minimal standards of human diet. The specific problems of child health, general and professional education, economic considerations, the agricultural and national nutrition policies and social welfare are discussed in the first chapter. The special dietary needs of different classes and age groups, including expectant and nursing mothers, infants, children of various ages and adults, are considered briefly in the second chapter. Energy requirements and the specific role of various foodstuffs in the dietary form the subject of considerable discussion. Perhaps the most important conclusion was that milk is the nearest approach to a perfect and complete food and that no other single food is known that can be used as a substitute. Since, however, different foods are available at lower costs in some areas than in others, the possibilities of substitutions are important. Concerted international action would greatly stimulate the development of rational nutrition. An enormous mass of information on nutrition is available in the world, but it is fragmentary, heterogeneous and frequently devoid of scientific basis. In short, the conclusion is obvious that the gaps between general knowledge on nutrition and the application of this knowledge in legislative practice are wide. The main problem is to bridge this gap.

A number of recommendations are made in this report, including the encouragement and support in every possible way of further scientific study of nutrition problems; vigorous policies of education in public nutrition; special consideration of the means of meeting the nutritional needs of the lower income sections

of each community, the setting up of standards of reference and specifications for grading food according to quality, and consideration of the degree and method by which national supplies and consumption of individual foods might be improved.

The analysis of the physiologic bases of nutrition, contained in the second volume of the report, results in the following general recommendations: 1 Although a simplified diet may be so constituted from a few protective foods as to be satisfactory, it is a general principle that variety in diet tends to safety, provided it contains a sufficiency of the protective types of food materials. 2 Since white flour in the process of milling is deprived of important nutritive elements, its use should be decreased and partial replacement by lightly milled cereals should be encouraged. 3 Milk should form a conspicuous element of the diet at all ages. 4 Fresh vegetables and fruits should always be constituents of the normal mixed diet. 5 The need for provision of extra vitamin D wherever and whenever sunshine is not abundant is especially emphasized.

MASKED ALLERGENS

The protean manifestations of the allergic state and the apparent infinitude of substances to which the human being may become sensitized have made us more conscious of the importance of knowledge in this field. Reports of new agents as sensitizers are encountered with increasing frequency. Recently a starch-splitting enzyme has been shown to be the causative agent in untoward gastro-intestinal symptoms following its administration. Certain constipation correctives of plant origin produce similar results. Many of these events cannot be foreseen. When products already marketed and of known composition are concerned, much needless inconvenience and not infrequently even dangerous reactions may be avoided by investigation previous to use. The more adequate labeling of these materials will prevent much unnecessary distress. No group of individuals is more aware of its environment, is more careful of its food, its drugs, its very milieu, than those who are allergic. Unless forewarned by their physicians or by the label of the manufacturer, these otherwise conservative and wary folk must learn by grievous experience. It makes considerable difference whether vitamin preparations (now in seasonally increased usage) are put up in fish oil, maize oil or peanut oil. The palatability and digestibility of potato chips may depend entirely on whether they are cooked in lard, cottonseed oil or linseed oil. The small fraction of wheat in a supposed "all-rye" bread may spell the difference between a happy or a miserable few hours. The unlabeled bromide sedative, phenolphthalein laxative or iodide compound may cause more discomfort than the conditions they allegedly correct. The memory of any practitioner could multiply these examples many times.

¹ The Problem of Nutrition. Vol. 1. Interim Report of the Mixed Committee on the Problem of Nutrition. Vol. 2. Report on the Physiological Bases of Nutrition. Distributed by World Peace Foundation, 8 West Fortieth Street, New York.

Proper labeling of such commodities should set forth not only their principal ingredients but every substance contained in them or of significance in their preparation. The ready response of the public to such a plan would be manifested by the increased use and prescription of products so marketed. There would be no need for compulsion to bring the usual stand-patters and conscientious objectors into line, for, once the advantages of such a program were seen, they would be quick to follow, and an informed public would enjoy the benefits of this new protection.

Caveat emptor was never meant to apply to the purchase of commodities that affect the health of a nation. The need for such a warning will automatically disappear with the unmasking of our commercial labels. Education and experience have made the allergic patient, cosmetic conscious, food and drug conscious, and household conscious. To remove the cloak of obscurity from articles in common use is a decided step toward making self preservation less difficult for an increasingly large proportion of our population.

Current Comment

INEFFECTIVENESS OF CONTRACEPTIVE METHODS

The reproductive life histories of 30,949 women form the basis for a recent report by Pearl.¹ Of the white women in the sample, 10,806, or 42.7 per cent, and of the Negro women 925, or 16.4 per cent, had practiced contraception up to the time of record. An analysis of the mean and median age of women not practicing contraception, married only once and having no form of gynecologic disease, shows that under these conditions the median pregnancy rates of white and of Negro women are identical in each quinquennial age period of exposure to the risk of pregnancy. The same is true also for the age specific mean pregnancy rates, except for two age periods in which the racial differences are probably statistically different. The analysis of the age specific mean and median pregnancy rates of white women practicing contraception regularly and steadily throughout their married lives, without intermission of any sort, married only once and free of gynecologic disease, showed that this type of contraceptive practice led generally to a reduction of median pregnancy rates below those of noncontraceptors in the same age period. This reduction in pregnancy rates, however, averaged only from 20 to 30 per cent. This low average may probably be interpreted as an expression of the relative lack of intelligence and effectiveness of these women with the methods employed. Among Negro women in the same category the reduction of pregnancy rates was insignificantly slight. The latter fact demonstrates the extremely inexact nature of ordinary birth control methods when employed by Negro women.

¹ Pearl, Raymond. Third Progress Report on a Study of Family Limitation. Milbank Memorial Fund Quarterly 1:4 July 1936.

CULTURAL METHODS FOR THE DIAGNOSIS OF GONOCOCCIC INFECTIONS

Many mediums and procedures have been described for the cultivation of *Neisseria gonorrhoeae* since Bumm in 1885 first successfully grew the organisms on coagulated human serum. Difficulty heretofore has been experienced in isolating the gonococcus from purulent discharges teeming with other species of bacteria. Most significant information on the growth requirements was contributed by McLeod and his associates¹ in England. They observed that autoclaved peptones inhibited the growth of the gonococcus but that by incorporating heated blood in the medium this untoward effect was eliminated. The British investigators also proved that a reinforcement of the atmosphere with approximately 10 per cent carbon dioxide favored the isolation of the organism, while such an atmosphere was unnecessary to propagate stock strains. In this country, Leahy and Carpenter² not only confirmed these observations but reported that 15 per cent of the strains of gonococci failed to grow unless the atmosphere in which the cultures were incubated contained 10 per cent carbon dioxide. Furthermore, they observed that the temperature of incubation was an essential factor in the routine isolation of cultures. Some races failed to grow at 37 C. but developed at 34 C., and vice versa. This information suggests that more positive cultures may be obtained when lower temperatures, such as 35 or 36 C., are employed. Another most useful adjunct to the cultural method is the "oxydase test" described by Gordon and McLeod.³ It is used to identify colonies of *Neisseria* in mixed cultures and is especially valuable in differentiating such colonies from those of streptococci and diphtheroids, which macroscopically appear very similar. Several workers⁴ in this country and abroad have reported that by its use in conjunction with the cultural method from 15 to 50 per cent more positive diagnoses were made than by the examination of stained smears for gram negative diplococci. The cultural method also serves as a reliable test for cure, in which role it is perhaps of greatest value. Its use overcomes the difficulties encountered in examining smears in chronic cases of gonorrhea when secondary infection has changed the clinical picture and few gonococci are present in the inflammatory exudate. The isolation of *Neisseria gonorrhoeae* therefore removes the shortcomings of the "smear" method and renders an unmistakable diagnosis. Furthermore, it constitutes medicolegal evidence that is acceptable in court. Although further research will undoubtedly contribute toward the simplification of the cultural method and make it more practical, the more extensive use of the present procedure in public health laboratories will immeasurably aid in the control of gonococcic infections.

¹ Gordon, John, and McLeod, J. W. *J. Path. & Bact.* 20:13 (Jan.) 1926. McLeod, J. W., Wheatley, Bertha, and Phelon, H. *Brit. J. Exper. Path.* 8:25 (Feb.) 1927.
² Carpenter, C. M., and Leahy, Alice D. *J. Bact.* 20:36 (Jan.) 1935. Leahy, Alice D., and Carpenter, C. M. *Am. J. Syph. Gonorr. & Ven. Dis.* 20:347 (July) 1936.
³ Gordon, John, and McLeod, J. W. *J. Path. & Bact.* 31:185 (April) 1928.
⁴ Spohr, C. L., and Landy, Maurice. *J. Lab. & Clin. Med.* 21:650 (March) 1936. McLeod, J. W., Coates, J. C., Happold, F. C., Priestley, D. P., and Wheatley, Bertha. *J. Path. & Bact.* 30:221 (July) 1934. Price, I. N. O. *Brit. M. J.* 1:199 (Feb. 2) 1929. Carpenter and Leahy.² Leahy and Carpenter.²

Medical Economics

MEDICAL AND HOSPITAL CARE FOR DEPENDENT FAMILIES

A Government Problem as Met in the City of Rochester, N Y

S J APPELBAUM, M D
ROCHESTER N Y

Medical care of the indigent as a government obligation in the past few years has become an increasingly greater problem. This is due to two factors (1) the large increase in the numbers who are not able to purchase their medical needs, and (2) the increasing inability of private agencies to supply the necessary medical needs.

The old state Poor Law, which was in effect until 1930, was rather vague with reference to medical care. Medical care, while implied in the old Poor Law, was not definitely mandatory. The Public Welfare Law of 1930 under article IX section 77, however, definitely states that 'It shall be the duty of public welfare officials insofar as funds are available for that purpose, to provide adequately for those unable to maintain themselves. They shall, whenever possible, administer such care and treatment as may restore such persons to a condition of self support, and shall further give such service to those liable to become destitute as may prevent the necessity of their becoming public charges.'

Article X, section 83 as later amended and effective April 25 1935 made the responsibility of the public welfare districts for providing medical care, not only for persons unable to provide such care, but also for persons not otherwise in need of relief. Section 83 reads "The public welfare district shall be responsible for providing necessary medical care for all persons under its care, and for such persons otherwise able to maintain themselves, who are unable to secure necessary medical care. Such care may be given in dispensaries, hospitals, the person's home, or other suitable place."

In order to provide for such care, the welfare district is empowered under section 84 to appoint physicians to care for sick persons in their homes. 'In a county welfare district such physician or physicians shall be appointed by the county commissioner. In a city such physician or physicians shall be appointed in accordance with the provisions of the general or local law, relating to such city. In a town, such physician shall be appointed by the town board. Where no physician or physicians is so appointed, the public welfare official shall employ a physician or physicians to visit sick persons in their homes whenever necessary.'

Under section 85 the present Public Welfare Law makes counties and cities responsible for providing hospital care. Under the old Poor Law, towns provided hospital care but now have no responsibility for such care. The law also provides a definite procedure for securing acceptance as public charges in emergency cases. These cases are of increasing importance. The old Poor Law made no provisions and had no procedures for this group. Under the foregoing laws the principle is definitely established that the state, through its various political units, has a definite obligation to provide not only food shelter and clothing but also medical care to those in need.

As relief increasingly became a major problem in the past few years, the state through the Temporary Emergency Relief Administration stepped into the picture to share in the cost and make possible a fuller and more adequate service than was possible through unassisted local funds.

The Emergency Relief Act setting up the Temporary Emergency Relief Administration was passed in 1931. As amended

in 1933 it reads as follows: "'Home Relief' means shelter, fuel, food, clothing, light, necessary household supplies, medicine, medical supplies, relief to veterans under existing laws and medical attendance furnished by a municipal corporation or a town, where home relief is a town charge, to persons or their dependents in their abode or habitation whenever possible and does not include old age relief or allowances made to mothers for the care of dependent children or hospital or institutional care.'

The state, then, through the Temporary Emergency Relief Administration does not participate in the cost of hospital or institutional care and furthermore under its regulations will not approve claims for expenditures by municipal corporations in cases

"1 Where necessary hospital or institutional care has not been provided, or has been unduly delayed, and

2 Where full use has not been made of all existing public facilities for providing free medical services"

To provide for the orderly administration of its activities, the Temporary Emergency Relief Administration has set up rules and regulations under which it functions. On March 3, 1933, the Temporary Emergency Relief Administration adopted "Rules and Regulations Governing Medical Care to Home Relief Clients" in the form approved by the Special Temporary

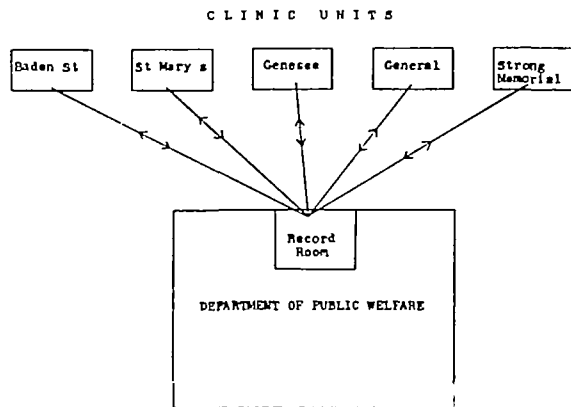


Chart 1—Contact between clinic units and record room of Department of Public Welfare. Direct telephone connections for verification of status of case.

Emergency Relief Administration Advisory Committee of the Medical Society of the State of New York, and the State Commissioner of Health. These are the rules and regulations revised from time to time, the last revision being in March of this year and in effect April 1, 1936, under which medical care is administered in the various political units of the state so far as the state assumes the responsibility for medical care.

With the preceding as a general background, the facilities and regulations created in the city of Rochester to meet the problem of medical care of the indigent may now be discussed.

The private hospitals in the city of Rochester had been operating for the past several years with increasing deficits over and above allotments made by the Community Chest. In response to the needs of the hospitals, it was determined in consultation with and with the approval of, the State Department of Health and the Temporary Emergency Relief Administration, to institute an experiment whereby the hospitals would be reimbursed for clinic care given to the Department of Public Welfare clients in the outpatient departments of the hospitals.

For the two fiscal years April 1933-1934 and April 1934-1935 the combined operating deficits of the four private hospitals participating in the Community Chest respectively were in round numbers \$200,000 and \$225,000. In each year the Community Chest granted these hospitals about \$157,000, with a resulting net deficit of about \$42,000 and \$69,000 for the respec-

five years The respective figures for 1935-1936 were \$222,000, \$182,000 and \$40,000 In recognizing that it is a municipal obligation to pay for the medical needs supplied to the clients of the Department of Public Welfare by these hospitals, just as the Department of Public Welfare pays for the food shelter and clothing supplied to its clients, it was expected that these deficits, either in full or in a large part, would not recur

As a by-product of the need for medical direction and supervision for this particular activity, the municipal authorities

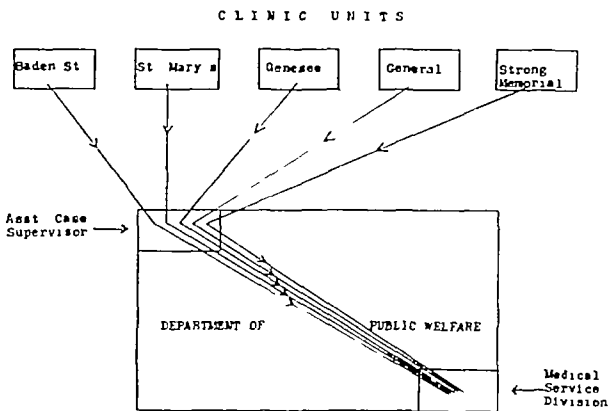


Chart 2—Routing of medical supply forms from clinic units to Medical Service Division

deemed it desirable to consolidate the entire question of medical care to the indigent, including medicines, medical supplies and hospitalization with this outpatient program I was requested in June of last year to take over the directorship of the Medical Service Division of the Department of Public Welfare with that end in view A medical unit had existed in the Department of Public Welfare Its supervision of these medical activities however, because of the lack of competent medical advice, was not considered adequate.

An analysis of the medical needs of clients of the Department of Public Welfare and of individuals otherwise indigent indicated the following desirable activities in such a division of the Department of Public Welfare.

- 1 Medical care supplied in homes of patients and offices of physicians
- 2 Dental care—treatments extractions repairs and dentures
- 3 Clinic care in outpatient departments of hospital or dispensary
- 4 The supplying of medical needs such as
 - (a) Medicines on prescriptions
 - (b) Medical appliances, eyeglasses orthopedic needs, special belts, braces, corsets and shoes, and so on
- 5 Hospitalization
 - (a) Private hospitals
 - (b) Municipal hospital.
 - (c) County hospital
- 6 Placement of individuals in
 - (a) Monroe County Home.
 - (b) Private homes

Let me briefly dispose of several of these simpler problems and then take up more fully the major problems such as arrangements for medical care through the dispensaries the supplying of medical needs and the large question of hospitalization.

Medical care in the homes of patients and the physicians office is furnished through a staff of about twenty city physicians working under the supervision of the Health Bureau These physicians also have responsibility for medical activities in the public schools Requests for such services are made at the Medical Division The requests are then passed on to the

Health Bureau There are no provisions in accordance with the Public Welfare Law for payment for medical care to private physicians

Dental care is provided through the dental clinics of the dispensaries and several dentists located in different parts of the city, in accordance with the regulations and schedules of the Temporary Emergency Relief Administration

Admission of individuals into the County Hospital and Home, either direct or on transfer from a general hospital, is arranged for through the office of the County Commissioner of Public Welfare.

The problem of assuming financial responsibility for clinic care for families on the relief rolls of the Department of Public Welfare was a new project something in the nature of an experiment This demanded the creation of an organization and the formulation of regulations, schedules and procedures

Five clinics were selected four attached to hospitals and one unattached dispensary in a section of the city without a hospital One clinic having less than 20 000 visits a year was not included In each of these five clinics was established a unit of the Medical Service Division consisting of a trained social service worker with medical experience or a graduate nurse with social service experience and one or two clerical aids, depending on the size of the clinic The units were opened successively, from four to seven days apart, beginning with the smallest The first unit was opened with two staffs, one, which remained at the first clinic and the second which was utilized as a traveling training unit for each of the succeeding units Each succeeding clinic was then opened with its unit and the training unit When this training unit arrived at the fourth clinic, the staff for the fifth and last clinic was also brought into the fourth unit for its training A direct telephone connection was established from each unit to the record room of the Department of Public Welfare for the verification of the statements of patients who claim to be on the relief rolls of the Department of Public Welfare Records are maintained of each patient, with daily and monthly reports on the work of each clinic.

Regulations and procedures governing the authorization of patients as a city charge, the authorization of expensive medica

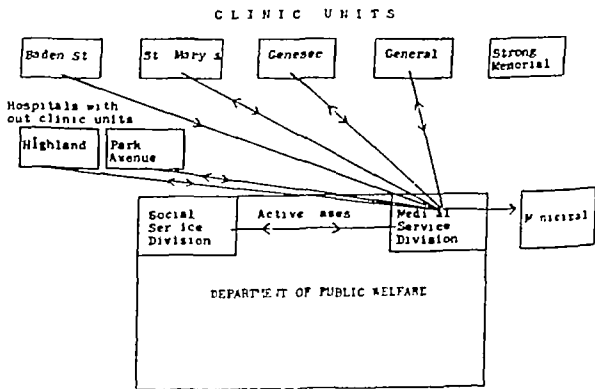


Chart 3—Routing of referrals for hospitalization Cases active with the department are referred to the visitor in charge of the family for guidance. Cases inactive with the department are investigated by the staff of investigators attached to the Medical Service Division Cases active and inactive in accordance with regulations are referred to the Municipal Hospital

tions and x-ray examinations and treatments were prepared These were discussed at a conference with representatives of the clinics and had their approval With but minor changes, these regulations and procedures are in use at the present time

A fee of \$0.50 is paid by the department for each clinic visit All medication costing the clinic less than \$0.50 is supplied without any additional charge. An authorization includes visits

to all clinics to which the patient may be referred on the day of authorization, including physical therapy, the usual laboratory tests and ordinary surgical dressings. Expensive drugs costing more than \$0.50, x-ray examinations and other medical needs are separately authorized. The care of acute and chronic cases is regulated in accordance with the procedures established by the Temporary Emergency Relief Administration.

The schedule of costs for expensive medication, x-ray examination and therapy is a schedule approved by the Temporary Emergency Relief Administration.

Because of anticipated other provisions, the care of venereal disease is not authorized through this set up. Because of the existence of other facilities neither prenatal nor postnatal well baby and tuberculosis clinics are authorized.

The amount paid to the hospitals for this service to welfare clients over the period from July 1, 1935 to Jan. 1, 1936, was \$37,174.82, approximately one half of the combined hospital deficits of the previous year. However this income is offset by an additional expenditure on the part of the clinics for medication supplied to these patients. This innovation of payment to the hospitals for clinic care given to clients of the Department of Public Welfare is an experiment. How long it will continue with state aid, or at all we do not know.

MEDICAL SUPPLY NEEDS

In order to conform with rules and regulations governing medical care as issued by the Temporary Emergency Relief Administration which of necessity conform with regulations of the Federal Emergency Relief Administration it is necessary to supervise with considerable care all requisitions that come to the Medical Division for medicines, medical supplies, dental work, orthopedic supplies, special shoes, eye glasses, corsets, belts, trusses and the like.

This supervision is indicated both in the interest of economy and with the view of securing state reimbursement. Reimbursement can be secured only as our procedures conform with state regulations. Excepting in very unusual conditions, prescriptions are restricted to medicines and mixtures listed in the latest editions of the United States Pharmacopeia and the National Formulary. A small list of additional remedies which have been accepted as approved in New and Nonofficial Remedies by the Council on Pharmacy and Chemistry of the American Medical Association may be authorized with a view to reimbursement.

Requests for medicines and medical supplies come to the Medical Service Division from two sources: the outpatient departments of the hospitals and city and private physicians. Such requests originating in the outpatient departments are routed on a medical supply form, first through the social service worker of the particular clinic unit for notation of pertinent facts and secondly through the Assistant General Case Supervisor with reference to social and financial factors and then to the Medical Service Division for final action. In evaluating these requisitions the age, the apparent degree of necessity, the relationship of need to continuing at or securing work and other significant factors are taken into consideration. Although the article requested is indicated to correct an abnormality, nevertheless the request is not always granted. The deviation from the normal may be quite minor. The age and general condition of the patient may be such that the requested article would have no bearing on the individual's activity. In general, then, the principle is observed not to authorize such needs which the average taxpayer would not purchase for himself out of his own private funds.

The problem of hospitalization is a large financial problem. In Rochester we have three distinct means of meeting this need for the dependents. There is a Municipal Hospital operated by contract by the University of Rochester in conjunction with the Strong Memorial Hospital, both units in turn being

affiliated with the medical school of the university, five private hospitals, and a county hospital under the supervision of the county commissioner of public welfare. The operation of the Municipal Hospital costs the city about \$400,000, care authorized in the private hospitals about \$175,000, and care authorized in the County Hospital about \$200,000. The private hospitals are paid a per diem rate of \$4 with no extras. The County Hospital rate is about \$15 a week. The per diem cost at the Municipal Hospital of course varies with its occupancy, less when the occupancy is high and more when the occupancy is low.

From the foregoing it can readily be seen that there are three important factors involved in the problem of hospitalization:

- 1 The problem of keeping the Municipal Hospital reasonably full. This involves a question of economy.

- 2 The problem of minimum interference with the intake of city cases by the private hospitals. These hospitals are an asset to the community. They fulfil a need in the community.

- 3 The problem of the care of the chronic cases, both by direct admission to the County Hospital and by transfer there from the private hospitals.

The attempt is being made to solve this rather complicated and conflicting problem under the following regulations. These regulations were approved by the hospital directors before they were put into effect.

- 1 Urgent cases are accepted at any hospital on arrival. If authorization is requested, authorization is given if warranted.

- 2 Cases that are not urgent, but which have been worked up in the clinics, are referred to the Medical Service Division before admission to the hospital. Authorization, if warranted, is made to the hospital or clinic where the case was worked up.

- 3 Cases that are not urgent and new to the clinic for the condition requiring hospitalization are referred in person to the Medical Service Division for investigation and disposition. The disposition usually is reference to the Municipal Hospital.

A distinction is made in cases referred for hospitalization between those active on relief and those inactive. In the active case the request is referred to the welfare visitor of the patient or family for guidance, but in the inactive case the investigation is made by a staff of investigators attached to the Medical Service Division. In the inactive group, however, no investigation is initiated until application has been made by the patient or a responsible member of the family for payment of the hospital bill by the Department of Public Welfare.

In certain cases, application for hospitalization is not accepted.

- 1 The Veteran group—these are referred to the respective organization.

- 2 The tuberculosis group—because of other existing facilities.

- 3 The tonsil and adenoid group of children under 16 years of age—because of other existing facilities.

- 4 The maternity group—also because of other existing facilities.

The hospital referral form is carefully considered in the disposition of the request for authorization of hospitalization. If the patient is already admitted to the hospital and the referral indicates no apparent emergency, the hospital is requested to explain what emergency indicated admission prior to authorization. No further action is taken on the referral until after the requested information is given. If the family does not make application for hospitalization within thirty days after admission the hospital is so notified. Applications are not accepted sixty days after hospitalization. If the family can make partial and deferred payment of the hospital bill, the case is not accepted and the hospital is so notified. Compensation liability and legal residence factors are also given careful consideration.

When authorization is requested for an acute exacerbation of a chronic condition, the authorized stay is usually limited

to the period of the exacerbation and arrangements are made for the transfer of such cases to the County Hospital if further hospitalization is indicated

COMMENT

The foregoing, in a rather sketchy form, outlines the facilities and procedures followed in Rochester in the effort to provide for medical and hospital care for dependent individuals. Of course, the need is not met 100 per cent. The burden of the average small taxpayer cannot be overlooked any more than he can overlook the inability of our voluntary health agencies to raise sufficient funds to meet the calls on them for adequate service. There is, however, a growing sense of public responsibility for meeting the health needs of our dependents. These health needs are beginning to be recognized as a public health problem. An individual case of illness, an illness which involves only personal health and which is not a menace to public health usually is not considered a public health problem. However, an accumulation of such conditions does become a matter of public health. It then does become a matter of public responsibility. Our aim has been to coordinate our medical resources and to utilize these resources most efficiently and economically, having in mind the needs of the dependent and the ability of the community to meet these needs.

Our program in Rochester does attempt to meet in a reasonable measure the medical needs of the dependent. Quite naturally, it does not meet all the demands that are made for service. A number of requests are refused either because the condition is deemed relatively trivial or because means of satisfying the demands exist in responsible members of the family. The problem of relief is so great that relief funds, either state or local, should not be expended on those individuals able to finance their own needs. This restriction should apply to medical and hospital care at public or private expense just as it does to other basic needs. Neither clinics nor hospitals should be expected to supply medical service to those who are able to pay reasonable professional fees for such service. Such a policy is essential in order to conserve the facilities and funds both public and private so as to make it possible to give more adequate service to those who are dependent.

This entire question of meeting the medical needs of the dependent through public and private funds is in a state of transition. How great will this problem continue to be? What effect will the recent social legislation have? I refer to legislation respecting old age security, retirement pension provisions, and unemployment insurance. At the same time there has developed in various parts of the country for the medium income group a variety of voluntary plans for the payment for medical service, such as group prepayment or insurance, deferred and partial payment, and group insurance to provide for hospitalization. It is yet too early to evaluate these new schemes. Without question some of these plans have value and will become recognized and approved facilities for securing medical and hospital care. Also, the entire scheme of state aid under the Temporary Emergency Relief Administration in our state in a short time will be transferred to a reorganized State Department of Public Welfare. All these and many other factors have a bearing on this question. Consequently, the problem is quite complicated. However, the realization in advance of these many complicating factors should help in the proper solution of the problem.

Of one thing I am certain: local facilities both public and private are unable to give adequate medical care to their dependents. Local funds are inadequate to meet the need. The state through one agency or another will continue to share the responsibility of meeting this problem if the problem is to be met adequately.

277 Alexander Street

Association News

ANNUAL CONFERENCE OF STATE SECRETARIES

The Annual Conference of Secretaries of Constituent State Medical Associations will be held in the American Medical Association Building, 535 North Dearborn Street, Chicago, November 16 and 17.

The program will be as follows:

MONDAY NOVEMBER 16 10 A. M.

Call to Order. Rock Sleyster, Chairman of the Board of Trustees of the American Medical Association.

Address. Charles Gordon Heyd, President of the American Medical Association.

Basic Science Laws. Mr. J. W. Holloway, Bureau of Legal Medicine and Legislation, American Medical Association.

The Michigan Filter System. L. Fernald Foster, Secretary of the Michigan State Medical Society.

The Public Health League of California. Glenn Myers, Los Angeles.

12:30 p. m. Luncheon.

MONDAY NOVEMBER 16 3 P. M.

Address. J. H. J. Upham, President-Elect, American Medical Association.

The United States Public Health Service and the Social Security Act. Thomas Parran, Surgeon General, United States Public Health Service.

The Children's Bureau and the Social Security Act. Miss Katharine F. Lenroot, Chief, Children's Bureau, United States Department of Labor.

Practical Hints on the Preparation of Manuscripts and Illustrations. Richard M. Hewitt, Rochester, Minn.

MONDAY NOVEMBER 16 6:30 P. M.

Dinner Conference of Editors of State Medical Journals. Holman Taylor, Secretary-Editor, State Medical Association of Texas, presiding.

TUESDAY NOVEMBER 17 9:30 A. M.

Insurance Against Alleged Malpractice. Mr. Thomas V. McDavitt, Bureau of Legal Medicine and Legislation, American Medical Association.

The Scientific Exhibit at Annual Meetings of State Medical Associations. Thomas G. Hull, Director, Bureau of Exhibits, American Medical Association.

REFERRED FOR DISCUSSION BY HOUSE OF DELEGATES

Consultation and Correspondence with Bureau of Legal Medicine and Legislation.

Violation of Laws Pertaining to Narcotics.

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was medical emergencies and how they are met. The new series is built around the central idea that 100,000 American physicians in great cities and tiny villages who are members of the American Medical Association and of county and state medical societies stand ready, day and night, to serve American people in sickness and in health.

The program will go out on the Blue network instead of the Red as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for Red where it occurs.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

November 10	Noise	Paul A. Teschner, M.D.
November 17	Football Injuries	Morris Fishbein, M.D.
November 24	Be Thankful	W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

State Association News—The council of the California Medical Association is holding a special meeting November 7 to consider the inauguration of a voluntary hospital insurance plan, which would be statewide in scope and under medical control.—The annual conference of county society secretaries will be held in San Francisco February 6

The Lane Lectures—Dr Eugene F Du Bois, professor of medicine, Cornell University Medical College, and medical director of the Russell Sage Institute, New York will deliver the Lane Lectures at Stanford University School of Medicine San Francisco, April 5, 9, 1937 The subject of the lectures will be "Mechanism of Heat Loss and Temperature Regulation"

State Board Reelects Officers—At the annual meeting of the California State Board of Medical Examiners in Sacramento, October 19, the following officers of the board were reelected Dr William R Molony, Los Angeles president, Dr Clark L Abbott, Richmond, and Dr Charles B Pinkham, San Francisco, secretary Dr Pinkham has held his position for twenty four years

Society News—At a meeting of the Alameda County Medical Association, October 19, the speakers were Drs Theodore C Lawson on "Tumors of the Colon", William Whitfield Crane "Surgical Aspects of Jaundice" Don D Weaver, "Acute Intestinal Obstructions," and Dexter N Richards, "Problems in Gastric Surgery" All are from Oakland—Dr Roger Anderson, Seattle addressed the Hollywood Academy of Medicine, October 29, on "An Ambulatory Method of Treating Fractures of the Lower Extremity"—At a meeting of the Los Angeles County Heart Association October 21 Dr Morris H Nathanson, Los Angeles, discussed "The Pathology and Pharmacology of Cardiac Syncope and Sudden Death"

CONNECTICUT

Personal—Dr Carlton K. Heady has been appointed town health officer of Milford, and Dr Robert M Taylor health officer of East Haven, succeeding Dr Paul H Brown—Dr Wilmar Mason Allen has been appointed director of Hartford Hospital, it is reported He has been a member of the staff for several years

University News—At a meeting of the Yale Medical Society in the Sterling Hall of Medicine, Yale University, October 14 Dr John P Peters, Anna J Eisenman, Ph D and Pauline N Hald, B A, discussed "Osmotic Exchanges in the Blood", Abraham White, Ph D, and Kurt G Stern, Ph D, "Studies on the Physiologically Active Group of Insulin" William W Greulich, Ph D, "A New Syndrome Associated with Testicular Tumors in Cryptorchid Dogs" and Alfred Z Gilman Ph D and Dr Louis S Goodman, "Secretion of an Antidiuretic Hypophyseal Hormone in Response to the Need for Renal Water Conservation"

DELAWARE

State Medical Election—Dr Charles P White, Wilmington, was chosen president of the Delaware State Medical Society at its recent annual meeting in Rehoboth Vice presidents are Drs Charles G Harmonson, Smyrna, and John Roscoe Elliott, Laurel Dr William H Spear, Wilmington was reelected secretary

FLORIDA

New Tuberculosis Bureau—The state department of health has established a tuberculosis bureau with Dr Arthur J Logie, Chattahoochee as director One of the first activities of the bureau will be a survey to determine the need for clinics throughout the counties A mobile laboratory will be operated in sections not cared for by county health units

Personal—Dr Harold D Van Schaick, Jacksonville, has been named a member of the state board of medical examiners succeeding Dr Simon E Driskell, Jacksonville.—Dr Arnold S Anderson, St. Petersburg has been appointed a member of the state tuberculosis board—Dr Joseph S Spoto, Tampa, has been appointed director of the Hillsborough County health unit.

GEORGIA

Appointments to State Board—Drs Horace G Huey, Homerville, has been appointed a member of the state board of medical examiners for a term of six years Dr Harold F McDuffie, Atlanta, has been named to fill an unexpired term on the board

Dr Boyd Addresses Pathologists—Dr William Boyd, professor of pathology University of Manitoba Faculty of Medicine Winnipeg, delivered the annual lecture of the Georgia Association of Pathologists, October 19, in Atlanta His subject was "Bronchogenic Carcinoma"

Crawford W Long Prize—The *Journal of the Medical Association of Georgia* for October announces that five copies of all papers read before the 1936 annual meeting of the association, which contain original work by their authors, should be submitted to the chairman of the Crawford W Long Memorial Prize committee, Dr William R Dancy, 102 West Jones Street, Savannah The features of each article which the writer claims to be original should be stated in a letter addressed to the committee and submitted with copies of the paper

ILLINOIS

Society News—Dr Leroy H Sloan, Chicago, discussed "Differential Diagnosis of Common Causes of Coma" before the Bureau County Medical Society, October 13—The Carroll County Medical Society was addressed in Savannah, October 13 by Drs John W Powers, Milwaukee, and Harry M Hedge, Chicago, on diseases of the skin and compound fractures respectively

Chicago

The Plan for Hospital Care—A new low cost hospitalization program, known as the 'plan for hospital care,' has been adopted by the Chicago Hospital Council Contracts have been sent to Chicago's hospitals Individuals may become subscribers to the plan, but all subscribers must make application in groups of ten Each contract is executed individually and not by group, but subscribers may make payments through their companies by payroll deductions or having a company remitting agent In small firms where such procedure is not practical, payments will be made either in full at the beginning of the contract or in quarterly remittances The annual fee is \$9.60 In addition, each subscriber may designate a dependent for whom he may purchase half coverage After designating the first dependent for an annual fee of \$4.20, the subscriber may for another \$2.20 cover in a group all the other members of his family who qualify as dependents All contracts become effective ten days after the date of the certificate, except that in case of accident or emergency illness hospital care will be provided immediately The contract does not cover pulmonary tuberculosis after diagnosis, or any care provided under the workmen's compensation laws of any state or the United States If a subscriber requires emergency or accident treatment outside Chicago his bill is paid to the extent of \$6 a day so long as he selects a hospital which maintains a standard of care and scale of rates satisfactory to the corporation and the Illinois State Department of Public Welfare Major benefits under this plan include twenty-one days of hospital care covering board and room in semiprivate accommodations general nursing service, operating room and auxiliary services delivery room and obstetric service for a subscriber in good standing more than twelve months, anesthesia when the services are rendered by salaried employees of the hospital ordinary drugs, medications and dressings, pathologic and laboratory services, and x-ray examinations when considered necessary by the attending physician Incorporators of the Hospital Service Corporation, which will carry out the project, include Mr Charles H Schweppe, president, St. Luke's Hospital Dr Arthur C Bachmeyer, director of the University of Chicago Clinics, Rev John W Barrett, director of Catholic hospitals in Chicago, Dr Irving S Cutter, dean, Northwestern University School of Medicine, J Dewey Lutes, superintendent, Ravenswood Hospital, and Taylor Strawn, president of Grant Hospital

INDIANA

State Medical Election—Dr Herman M Baker, Evansville, was chosen president-elect of the Indiana State Medical Association at the recent annual meeting in South Bend and Dr Edmund D Clark, Indianapolis, will take over the duties of president January 1 The next annual session will be held in French Lick

District Meetings—At the meeting of the Union District Medical Association in Rushville October 22, the speakers included Drs Walter U Kennedy, Newcastle on state

medicine, Ezra V Hahn, Indianapolis, results of collapse therapy in tuberculosis, and Mason B Light, Indianapolis, bronchoscopy as a diagnostic aid—The Eleventh District Medical Association held its fall meeting in Huntington, October 28, speakers included Drs Jesse O Arnold, Philadelphia, George J Garceau, Indianapolis Paul W Ferry, Kokomo and Charles P Emerson, Indianapolis

IOWA

Dr Peterson Named Professor of Surgery—Dr Frank R Peterson associate professor of surgery, State University of Iowa College of Medicine, Iowa City has been appointed professor and head of the department of surgery succeeding the late Dr Howard L Beye. Dr Peterson is 42 years of age. He graduated from the State University of Iowa in 1918 and from the school of medicine in 1920. He has been affiliated with the faculty of the university since 1921.

Society News—Dr Milo G Meyer, Marshalltown addressed the Jasper County Medical Society in Newton, September 1 on "The Irritable Colon"—At a meeting of the Johnson County Medical Society, October 7, Dr Ruben Nornland Iowa City, discussed "Classification and Treatment of Eczema and Dermatitis"—Wilber J Teeters Ph C, Iowa City addressed the Washington County Medical Society in Kalona, September 29, on "Chemistry in the Detection of Poisons"—The Southeastern Iowa Medical Society was addressed in Mount Pleasant October 15 among others by Drs Mazyck P Ravenel on immunization against infectious diseases, and Marcus Pinson Neal, cancer viewed as a preventable disease. Both are of Columbia Mo.

KENTUCKY

District Meetings—At a meeting of the tenth councilor district of the Kentucky State Medical Association in Lexington September 18, the speakers included Drs Thomas M Marks, Lexington, on "Early Diagnosis of Brain Diseases in Children", David M Cox, Louisville, "Endocrine Function and Dysfunction in Gynecology" and Ernest B Bradley Lexington "Insulin Protamine"—The Seventh District Medical Society met in Lancaster in September with the following speakers: Drs John W Scott, Lexington pneumonia Ellis S Allen Louisville, fractures of the long bones, Robert F Monroe, treatment of occipital posterior positions and Harry S Andrews, Louisville birth injuries—Among the speakers at a meeting of the Third District Medical Society in Hopkinsville September 16 were Drs Guthrie Y Graves, Bowling Green, on "Gas Gangrene Following Sacral Anesthesia" and Beverly Douglas Nashville "Plastic Procedures of Interest to the Practitioner."

LOUISIANA

Charity Hospital to Be Rebuilt.—Eight million dollars will be expended in a building program at Charity Hospital New Orleans. The main building of this unit which was erected in 1832 has been condemned and will be replaced with a twenty story modern hospital, newspapers report. Part of a PWA grant of \$3,600,000 recently given to the state will be used to finance a part of the construction. The group will ultimately provide facilities for 2,470 patients it was stated.

Society News—The Orleans Parish Medical Society was addressed October 12, by Drs Daniel N Silverman, New Orleans on "Continuous Drip Blood Transfusion" Theodore J Dimitry "The Introduction of Leprosy into Louisiana" Dr Eleazar R Bowie gave a demonstration of simplified projection of x-ray films. Mr Archibald H McIndoe, London England, addressed a special meeting of the society October 5 on plastic surgery—At a meeting of the Bi-Parish Medical Society in Jackson recently speakers were Drs Hiram W Kostmayer New Orleans and Lionel F Lorio Baton Rouge, on endocrinology and diseases of the mastoid.

MARYLAND

Marihuana Farm Found Near Baltimore—A marihuana farm described as one of the largest ever found in this country was discovered on the eastern edge of Baltimore October 3 newspapers reported. The leaves of the 3,000 drug plants were estimated to be worth \$1,000,000 on the retail market. Most of the leaves of the marihuana plants, which were in the center of the field and concealed by tomato plants pumpkins and cornstalks were still green and unfit for immediate use. A police guard was posted at the farm until the plants could be dug up and burned.

MASSACHUSETTS

Personal—Dr Walter B Cannon, George Higginson professor of physiology Harvard University Medical School, Boston, has been elected a corresponding member of the National Academy of Medicine of Buenos Aires Argentina.

Harvey Society Lectures—The William Harvey Society of Tufts College Medical School, Boston announces the following lectures at the Beth Israel Hospital:

- Dr Henry E Sigerist Welch professor of the history of medicine Johns Hopkins University School of Medicine December 11 "The Social Problems Confronting Medicine Today"
- Dr Siegfried J Thanhauser associate professor of medicine at Tufts January 15 "The Development of Our Knowledge of Metabolism"
- Dr Richard C Cabot Cambridge professor of clinical medicine emeritus Harvard University Medical School February 17 "The Wisdom of the Body"
- Dr John M Wheeler professor of ophthalmology Columbia University College of Physicians and Surgeons New York March 5 "Various Types of Grafts Used in Plastic Surgery About the Eyes"
- Dr James B Collip professor of biochemistry McGill University Faculty of Medicine Montreal, Que April 16 "Significance of Recent Studies on the Anterior Pituitary and Related Glands"

MICHIGAN

The Wayne County Programs—The Wayne County Medical Society held a public meeting, October 26 with Dr Victor G Heiser, New York, as the speaker on "Medical Adventures During Sixteen Trips Around the World." Dr Thomas Archibald Malloch, librarian, New York Academy of Medicine, New York, spoke November 2. A joint meeting of the medical section with the Detroit chapter of the American Association of Social Workers, November 9, will be addressed by Dr John H J Upham Columbus, Ohio President-Elect, American Medical Association, on "The Relation of the Social Worker to Medical Practice." Dr James Burns Amberson Jr, New York will speak at a general meeting November 16, and on November 30 the surgical section will be addressed by Dr Morris Fishbein Chicago, editor of THE JOURNAL, on "New Forms of Medical Practice."

Features of Medical School Opening Exercises—Honorary degrees of master of science and doctor of science, respectively, were conferred on Drs Russell S Rowland, Detroit and Reuben Peterson, Ann Arbor, September 26, by the University of Michigan at the eight-seventh annual opening exercises of the medical school. Dr Peterson retired from the faculty of the medical school in 1931 as emeritus professor of obstetrics and gynecology. A portrait of the late Dr Albert Moore Barrett was presented to the university by Dr Robert H Haskell medical superintendent of the Wayne County Training School, Northville. It was executed by John Koch Ann Arbor. Dr Barrett at the time of his death in April was professor of psychiatry at the university and director of the state psychopathic hospital. The Sternberg Medal for outstanding work in preventive medicine was presented to Dr Homer Allen Howes Coldwater now an intern at the University Hospital.

MINNESOTA

Special Meeting of House of Delegates—The House of Delegates of the Minnesota State Medical Association held a special session at the Hotel Lowry St Paul November 1. The meeting was called to formulate and define principles and policies of organized medicine for submission to the interim committee of the state legislature which is now engaged in shaping legislation to be introduced at the next session for the uniform and coordinated handling of social security relief and welfare activities in the state. The committee was created by a resolution adopted at the 1935-1936 special session of the legislature.

NEW HAMPSHIRE

Medical School News—Dr Hermann Burian formerly assistant to the director of the eye clinic of the University of Bern, has been appointed visiting research fellow in the department of physiologic optics at Dartmouth Medical School Hanover. Dr Nathan T Milliken Canandaigua N Y., superintendent of Oak Mount Sanitarium Holcomb N Y., has been appointed instructor in physical diagnosis.

NEW JERSEY

Society News—Dr William P Murphy, Boston will address the Academy of Medicine of Northern New Jersey November 19 on "Clinical Findings and Treatment of Pernicious Anemia." Dr Paul Klempner New York addressed the academy October 15 on "Newer Aspects of Liver Pathology." Dr Foster Kennedy New York gave a public lecture

at the academy, October 29, on "The Organic Background of Mind"—Thomas Cook, DDS, Philadelphia, addressed the Burlington County Medical Society, Burlington, September 9, on "Diseases of the Mouth and Their Importance to the Physician"—The Passaic County Medical Society held an "Interns' Night" at its meeting in Paterson, September 10, the speakers were Drs David Doktor, Burnett Memorial Hospital, Paterson, on "Anemia in Association with Achlorhydria", Seymour Scholtz, St Joseph's, "Hodgkin's Disease", Irving M Ariel, Paterson General, "Lymphogranuloma Inguinale", Rochelle Burstein, Passaic General "Childhood Eczema" and Oscar H Cohen, St Mary's, "A Case of Liver Abscess"

NEW YORK

Society News—Dr Russell M Wilder, Rochester, Minn., addressed the Rochester Academy of Medicine, October 1 on "The New Insulin"—Dr Howard T Langworthy, Brooklyn, addressed the Medical Society of the County of Nassau, Mineola October 27, on "Carbuncle of the Kidney"—Dr Wilbur Ward, New York, addressed the Medical Society of Westchester County, Grasslands, on obstetric technic and Dr Arthur W Bingham, East Orange, N J, on a maternal welfare program in progress in New Jersey—Dr Charles A Perry addressed the Medical Society of the County of Albany, October 28, on "Coronary Heart Disease"—Dr Anton W Sohrweide Jr Syracuse addressed the Seneca County Medical Society, Willard, October 8, on treatment of diseases of the skin

District Meetings—At a meeting of the Third District Branch of the Medical Society of the State of New York in Albany, September 22, the scientific program was presented by Drs Daniel M Brumfiel, Saranac Lake, speaking on "Diagnosis and Significance of Silicosis", Herbert M Bergamini New York Fundamentals in the Treatment of Fractures" John J Ramey, Troy, "A Review of Nasal Accessory Sinuses" Dr Edward S Godfrey Jr, state commissioner of health discussed plans for using federal appropriations to the department of health Drs Floyd S Winslow, Rochester president of the state society, Peter Irving, New York, secretary and David J Kaliski, New York, chairman of the committee on workmen's compensation spoke on state society activities—Among speakers before the Fourth District Branch of the Medical Society of the State of New York at Plattsburg, October 23 were Drs James B Collip, Montreal on hormones and Lewis M Hursthal, Boston, congestive heart failure Drs Floyd S Winslow, Rochester, and John B Wheeler, Burlington, Vt were speakers at a dinner at the Hotel Cumberland—The Fifth District Branch of the Medical Society of the State of New York met at the Rome State School, Rome, October 1 Guest speakers included Drs Donald Guthrie, Sayre Pa, on "Surgical Aspects of Peptic Ulcer" and Edwin P Maynard Jr, Brooklyn, "Cardiovascular Syphilis"

New York City

Friday Afternoon Lectures—Dr Russell S Fowler delivered the Friday afternoon lecture of the Medical Society of the County of Kings, October 16, on "Diagnosis of Abdominal Tumors." Dr Charles A Gordon spoke October 23 on "Everyday Obstetrics" and Dr Herman O Mosenthal October 30 on "Surgical Emergencies in Diabetes and Their Treatment." Dr Sam Z Levine spoke November 6 on "Water Metabolism in Normal Infants"

Personal—Dr George Henry Fox for many years a member of the faculty of the College of Physicians and Surgeons Columbia University, celebrated his ninetieth birthday October 8 Dr Fox was clinical professor of diseases of the skin from 1881 to 1904 and professor of dermatology from 1904 to 1907 He also taught at various times at the Woman's Medical College of New York Infirmary, the old Starling Medical College, Columbus, Ohio, and the New York Post-Graduate Medical School He was president of the Medical Society of the State of New York in 1895 He is the author of numerous publications on diseases of the skin

Staff Appointments Available—Three appointments in the general service of the Hospital for Joint Diseases to begin July 1 1937 and three to begin Jan 1, 1938, will be made by an examination to be held December 29 at the hospital Registrations for the examination must be received by December 15 The appointments are for two years' rotating service. Graduating students and graduates (unmarried men) of class A medical schools are eligible. The hospital provides maintenance and uniforms. Applications should be addressed to the director of the hospital, Madison Avenue and One Hundred and Twenty Third to One Hundred and Twenty-Fourth streets

NORTH CAROLINA

Specialty Society Meeting—The North Carolina Eye, Ear, Nose and Throat Society held its second annual meeting in Durham, October 8 Among the speakers was Dr Angus L MacLean, Baltimore, on "Etiology of Iritis from an Experimental Standpoint" Dr James M Lilly, Fayetteville, was elected president and Dr Franklin C Smith, Charlotte, secretary

Symposium at Duke University—The third annual symposium at Duke University School of Medicine, Durham, was presented October 15-17 on diseases of the heart, circulation and kidneys The speakers were Drs Stewart R Roberts, Atlanta Soma Weiss, Boston, William B Porter, Richmond and James Edwin Wood Jr, Charlottesville, Va William de B MacNider, Chapel Hill, Frank N Wilson, Ann Arbor, Mich Herrman L Blumgart, Boston Charles C Wolferth, Philadelphia Claude S Beck and Carl J Wiggers, Cleveland, James C White, Boston, Mont R Reid Cincinnati, William F Braasch, Rochester, Minn, Warfield T Longcope, Louis Hamman and Hugh H Young, Baltimore

OHIO

Personal—Dr Gertrude Felker, Dayton, recently received the honorary degree of master of arts at Rockford College, Rockford Ill—Dr Albert F Green, Cleveland recently celebrated his fiftieth anniversary in the practice of medicine.

State Medical Election—Dr John B Alcorn, Columbus, was named president-elect of the Ohio State Medical Association at the annual meeting in Cleveland October 8, and Dr Edwin M Huston, Dayton was installed as president. The next annual meeting will be in Dayton

Postgraduate Day in Akron—The Summit County Medical Society will present its fifth Postgraduate Day at the Mayflower Hotel November 11 The guest speakers will be Drs Fred H Albee, New York, who will discuss surgery of the knee and fractures of the neck of the femur, Arlie R Barnes, Rochester, Minn diagnosis of gastro-intestinal disease and fitting the diet to the patient, and Martin H Fischer, Cincinnati, diabetes and coma

OREGON

State Medical Election—Dr Charles T Sweeney, Medford, was chosen president-elect of the Oregon State Medical Society at the annual meeting at The Dalles, October 10, and Dr Thomas W Watts, Portland, was installed as president The following were elected vice presidents Drs Charles E Sears, Portland, John C Vandever, Bend, and William W Baum Salem Dr Morris L Bridgeman, Portland, was reelected secretary

PENNSYLVANIA

Society News—Dr Walter J Larkin, Scranton, was elected president of the Pennsylvania Association of School Physicians at the annual meeting in Pittsburgh in October, Dr Henry R Steadman, Erie, vice president, and Dr Mary J Baker, New Castle secretary

State Medical Election—Dr Frederick J Bishop, Scranton, was chosen president-elect of the Medical Society of the State of Pennsylvania at the annual meeting in Pittsburgh October 7 Dr Maxwell J Lick Erie, became president and Dr Walter F Donaldson Pittsburgh, was reelected secretary. The 1937 meeting will be held in Philadelphia, October 4-7

Philadelphia

Medical College News—Dr Thomas A Shallow, professor of surgery, Jefferson Medical College delivered the address at the opening exercises of the school September 21 on "Medical Progress"—Temple University School of Medicine opened its thirty-fifth session September 23 with an enrolment of 447 The freshman class of 100 was selected from 1,093 applicants

Fund for Study of Digestive Disorders—The bulk of an estate estimated at more than \$200,000 was bequeathed to the University of Pennsylvania by the late Frances T Kinsey to support and develop the Gastro-Intestinal Clinic at the University Hospital under the direction of Dr Thomas Grier Miller or for such other activities in this field as he may desire After Dr Miller severs his connection with the university hospital the income is to be used for such similar activities as the professor of medicine may desire. The fund will be known as The Kinsey-Thomas Foundation for the Study and Treatment of Diseases of the Digestive System" It is to be a memorial to two sisters and a brother-in-law of Miss Kinsey

Pittsburgh

Hospital News—Dr Henry A Christian Hersey professor of the theory and practice of physic at Harvard University Medical School Boston, spoke on "Diuretics at the annual celebration of "West Penn Day" at the Western Pennsylvania Hospital October 20

Society News—At a meeting of the Allegheny County Medical Society, October 20 acute appendicitis was the subject of discussion. Dr William W Briant Jr, Mount Lebanon, spoke on the disease as seen in children. Dr Harold G Kuehner, in adults, and Dr Harry E Feather, in the older patient. The last of three pediatric institutes sponsored by the state department of health and the Medical Society of the State of Pennsylvania in Pittsburgh was held at the Western Pennsylvania Hospital October 28. Dr Henry C Flood presided, and the speakers were Drs Edmund R McCluskey on respiratory diseases, Carl L Ruder blood dyscrasias, and Minor D Silberberg, allergy and endocrinology.

SOUTH CAROLINA

Society News—Dr Robert W Ball, Columbia addressed the York County Medical Society, September 24, on "Maternal Preventive Medicine."—At a meeting of the Seventh District Medical Association in Kingstree September 17, the speakers included Drs Hal McCluney Davison, Atlanta on Nonspecific Treatment of Allergic Conditions. Hamilton W McKay, Charlotte, N C "Pyelocystitis Complicating Pregnancy", Frank K. Boland Atlanta, "Surgical Treatment of Pulmonary Tuberculosis", and Oscar D Baxter, Sumter, Evolution of Symptoms." Dr Robert C Bruce, Greenville, president of the South Carolina Medical Association, made an address on medical economics.

TENNESSEE

Fined for Violation of Medical Practice Act—Filmore Shoun, Greeneville, was recently fined \$175 and costs for violation of the medical practice act. The evidence showed that Shoun applied a salve containing zinc chloride to the nose of a man in Chuckey, to remove a mole. The application of the salve resulted in destruction of a portion of the nose leaving a complete perforation.

Health at Nashville—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million for the week ended October 24 indicate that the highest mortality rate (23.8) appeared for Nashville and that the rate for the group of cities as a whole was 11.3. The mortality rate for Nashville for the corresponding week of 1935 was 12.2 and the rate for the group of cities was 10.7. The annual rate for the eighty-six cities for the forty-three weeks of 1936 was 12.1, as compared with 11.4 for the corresponding period of the preceding year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that a city is a hospital center for a large area outside the city limits or that it has a large Negro population may tend to increase the death rate.

Society News—Dr Tinsley R. Harrison discussed the 'Treatment of Congestive Heart Failure' before the Nashville Academy of Medicine, October 13. Dr Joseph T Gilbert presented a case report on Meningitis Complicated with Gas Bacillus Infection. Drs John W Hocker and Samuel H Long, Chattanooga, addressed the Hamilton County Medical Society November 5 on 'The Status of Immunization in Pediatrics' and 'Maxillary Sinusitis' respectively. At a meeting of the Hardin Lawrence Lewis, Perry and Wayne Counties Medical Society, September 29 the speakers were Drs Dexter L Woods, Waynesboro on Compensation (Industrial) in General Practice. Jere L. Crook Jackson "Radium and Its Uses." John W Simpson Nashville. A New Conception in the Treatment of Senile Vaginitis and William E. Boyce, Flat Woods "Hemophilia."—Dr Frank H Krusen, Rochester, Minn., addressed the Memphis and Shelby County Medical Society, Memphis, September 1 on 'The Relationship of Physical Therapy to General Practice' and James B Mitchell Jr, Ph.D., Memphis, spoke on Pharmacologic Aspects of Dilaudid."

TEXAS

State Public Health Meeting—Dr Ernest W Prothro Temple was elected president of the Texas Public Health Association at the annual meeting at Kilgore in October. Dr Reginald M Atwater New York secretary of the American Public Health Association was among the speakers discussing the future of public health work. The next meeting will be in El Paso.

Society News—Drs Frank H Newton and Edwin L Rippy addressed the Dallas County Medical Society, Dallas,

September 24, on "Injuries to the Eyes" and "Physical Constitutional Types and Their Relationship to Disease" respectively.—Drs Cecil S E Touzel and McKinley H Crabb, Fort Worth addressed the Tarrant County Medical Society in Fort Worth, September 15, on "Childhood Tuberculosis" and "Typhoid Carriers" respectively.—Drs Carroll M Pounders and Charles P Bondurant, Oklahoma City, addressed the Wichita County Medical Society, Wichita Falls, October 13 on nervous disorders of children and treatment of common skin diseases, respectively.

WISCONSIN

Dinner in Honor of Dr Sleyster—The Medical Society of Milwaukee County will give a dinner at the Wisconsin Club, Milwaukee, Saturday evening November 14 in honor of Dr Rock Sleyster, Wauwatosa, chairman of the Board of Trustees of the American Medical Association. Dr Arthur J Patek is chairman of the committee in charge and members are Drs J Gurney Taylor, Eben J Carey, Frederick J Gaenslen and William L Herner. Dr Sleyster is a past president of the State Medical Society of Wisconsin.

ALASKA

Outbreak of Scarlet Fever—It is reported that the schools at Snag Point and Clark Point were closed indefinitely, October 27, due to an outbreak of scarlet fever.

PUERTO RICO

Medical Association Election—Dr Juan H Font, San Juan, was elected president of the Puerto Rico Medical Association at a meeting August 30. Others elected were Drs Manuel Pujadas Diaz, San Juan, vice president, Dolores M Pinero Rio Piedras, secretary, and David E Garcia, Rio Piedras, treasurer.

GENERAL

Bequests and Donations—The following bequests and donations have recently been announced:

Michael Reese Hospital Chicago \$100,000 to endow not less than six beds for needy children under the will of the late Mrs G T Smith.

Hospital and Home for Crippled Children Newark \$500,000 by the will of the late Clark P Williams.

Homeopathic Medical and Surgical Hospital and St Joseph's Hospital, Reading Pa \$1,500 and \$1,200 respectively under the will of Dr Willington Dietrich.

Ohio State University College of Medicine, Columbus \$200,000 by the will of the late Mariette Combs for medical and surgical research and the residuary estate for and to needy students.

Columbus Children's Hospital Columbus also received \$10,000.

Methodist Episcopal Hospital Philadelphia \$10,000 Chestnut Hill and Germantown hospitals \$5,000 each by the will of the late John Ervin Valt.

Presbyterian Hospital New York \$20,000 by the will of the late Mrs S Augusta Mora.

Yale University New Haven \$15,384 for fellowships and research in the medical school.

Changes in Status of Licensure—The Virginia State Board of Medical Examiners recently reported the following action:

Dr Walter F Hartman Swoope license restored at the June meeting. It had been revoked at the meeting of December 1935 because of narcotic violation.

Dr Mars L Madsen formerly of Paia Hawaii license reinstated July 22. License revoked Dec 28 1935 because of violation of statutes.

The Massachusetts Board of Registration in Medicine announces the following:

Dr Julius Saape, Somerville license suspended for three months October 8 for deceit in connection with an accident insurance case.

The Illinois State Department of Registration reports the following action:

Dr Joseph M Blakemore Chicago license restored.

Dr Milton M Glascoe Jacksonville license revoked for violation of the Harrison Narcotic Act.

Dr Russell R. Craft Chicago license revoked for his conviction of a felony.

Dr Edward E Rohrabough, Peoria license revoked for his conviction of violation of the Harrison Narcotic Act.

The Connecticut State Department of Health reports the following:

Dr Gaetano G Petrocelli Waterbury license revoked August 13 having been found guilty of manslaughter.

Society News—Dr Cassius H Watson medical director of the American Telephone and Telegraph Company, New York, was reelected president of the National Safety Council at its annual congress in Atlantic City October 5-9.—The Pacific Coast Surgical Association will meet in Seattle Wash and Victoria B C Feb 24-27 1937.—Dr Robert D Mussey, Rochester, Minn was chosen president-elect of the Central Association of Obstetricians and Gynecologists at the eighth annual meeting in Detroit October 15-17 and Dr Jean Paul Pratt Detroit was inducted into the presidency. Dr Calvin R. Hannah Dallas, Texas was named vice president and

Dr Ralph A Reis, Chicago, reelected secretary. The next annual meeting will be held in Dallas in November. — Dr Chester T Brown, Newark, N. J., was elected president of the Association of Life Insurance Medical Directors of America at the forty-seventh annual meeting in New York, October 22-23. Drs Samuel B Scholz Jr, Philadelphia, and Henry W Cook, Minneapolis, were elected vice presidents and Dr Edwin G Dewis Newark, secretary. — Mr Robert E. Neff, superintendent, State University Hospitals, Iowa City, was chosen president elect of the American Hospital Association at its annual meeting in Cleveland recently. Dr Claude W Munger, medical director of Grasslands Hospital, Valhalla, N. Y., was installed as president. — Dr Henry W F Woltman, Rochester, Minn., was elected president of the Central Neuropsychiatric Association at its annual meeting, October 10. Dr George B Hassin, Chicago, was named vice president, and Dr Karl A Menninger, Topeka, Kan., secretary.

Southern Medical Association—The thirtieth annual meeting of the Southern Medical Association will be held at the Fifth Regiment Armory, Baltimore, November 17-20, with the Baltimore City Medical Society acting as host. Tuesday evening there will be a general public session with the following speakers: Dr Jonathan C Meakins, professor of medicine, McGill University Faculty of Medicine, Montreal, on "Heart Disease Versus Longevity"; Dr Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., "Syphilis as a Public Health Problem," and the Rev. Alphonse M. Schwitalla, S. J., dean, St. Louis University School of Medicine, St. Louis, "Medical Education and Medical Practice." Presidents' Night will be observed Wednesday evening. Tuesday will be devoted to general clinical sessions on medicine, surgery and otolaryngology, while Wednesday morning will be given over to general clinical sessions, meeting concurrently, representing all the specialties. The remainder of the program will be devoted to sectional presentations. The annual golf tournament will be played during the meeting and the annual trap and skeet shooting tournament will be held at the Oriole Gun Club, November 18. The woman's auxiliary to the Southern Medical Association will meet November 18-19, at the Lord Baltimore Hotel. Other organizations meeting at the same time include the southern branch of the American Public Health Association, National Malaria Committee and regions one and two of the American Academy of Pediatrics. An allergy clinic and round table will be held November 19 at the armory with Dr Hal M. Davison, Atlanta, as chairman.

Annual Report of the Red Cross—Preceding its annual roll call, which begins November 11, the American Red Cross issued its report of activities during the fiscal year ended June 30, 1936. In the twelve months covered by the report the Red Cross rendered aid in 105 domestic disasters to 400,000 persons. In addition there were thirty-nine disasters in insular possessions and six in foreign countries. These included the floods in New England, Pennsylvania, southern New York and Ohio, tornadoes in Georgia and Mississippi, hurricanes in Florida, earthquakes in Montana and epidemics in Kentucky, Missouri, Colorado and Oklahoma. Under a policy adopted the previous year, Red Cross chapters participated in various health projects in cooperation with local health agencies including typhoid and diphtheria immunization, malaria control, oral hygiene and tuberculin testing of school children. Seventy-seven chapters carried on programs of education on food and nutrition. Public health nurses made 1,070,000 visits during the year. The course in home hygiene and care of the sick was presented to 68,677 students, 25,000 more than in 1932. First aid instruction certificates were issued to 222,693 persons. During the year 867 highway emergency first aid stations were established and 3,617 have been provided for, to be opened as fast as personnel can be trained. The Red Cross expended \$7,682,821.20 during the fiscal year. An appeal for funds after the storms and floods of March of this year resulted in gifts amounting to \$7,955,963.38. Expenditures for relief in those disasters had amounted to \$3,789,408.62 by June 30 and the remainder was being held to cover the balance needed to finish the relief program.

Council of Research in Child Neurology—Appointment of a council to administer the Friedsam Foundation's program of research in child neurology was announced October 17 by Dr Bernard Sachs, New York, who is director of the new project. Announcement of a grant from the foundation to finance the new work was made in *THE JOURNAL*, July 11, page 139. Members of the council are Drs Louis Hausman, Foster Kennedy, Frederick Tilney, Stanley Brady, Howard Reid Craig and Lewis Clark Wagner, Mr William E. Grady, associate superintendent of public schools in New York and Mr Nathan Straus. In addition an advisory committee has

been appointed with the following members: Drs Walter B. Cannon, Boston; Harvey Cushing, New Haven, Conn.; Adolf Meyer, Baltimore; Edward A. Strecker, Philadelphia; Lewis J. Pollock and Harold Douglas Singer, Chicago; Ernest Sachs, St. Louis; Walter F. Schaller, San Francisco; Frederick Peterson, Charles R. Stockard, Herbert B. Wilcox and Alfred Wiener, New York; Georges Guillain, Paris; Samuel Alexander Kinnier Wilson, London; and Otto Marburg, Vienna. The research program will include studies of (1) organic and functional diseases of the nervous system in children, (2) neuroses and psychoses in early life, and (3) social personality and home problems. It will be carried out through grants and scholarships to research workers all over the world. The council will consider only original work that promises to be fruitful of results, and the applicant must state distinctly the problem under investigation and the methods to be pursued, it was said. Results of the work will be recorded in volumes to be issued by the council from year to year. This program is distinct from a similar program begun at the Neurological Institute, New York, two years ago through a grant of \$100,000 from the Friedsam Foundation, it was explained.

CANADA

Society News—Dr James R. Corston, Halifax, was elected president of the Nova Scotia Medical Society at the annual meeting in Halifax, August 31-September 5. In his official address, Dr Robert M. Benvie, Stellarton, retiring president, discussed sterilization of the mentally unfit. Drs Herman M. Robertson, Victoria, B. C., and Thomas C. Routley, Toronto, president and secretary, respectively, of the Canadian Medical Association, discussed unification of the provincial societies as component parts of the dominion organization. — The Canadian Physiological Society, organized in 1935, met at Queen's University, Kingston, October 24. — Drs Austin B. Schinbein and William Elliott Harrison, Vancouver, B. C., addressed the Vancouver Medical Association, October 6, on "Surgical Treatment of Pulmonary Tuberculosis." — Sir Albert James Walton, London, addressed the Toronto Academy of Medicine at a special meeting October 15 on "Some Aspects of Peptic Ulceration." At a special meeting, October 9, Dr Charles Hill, deputy medical secretary of the British Medical Association, London, spoke on health insurance.

FOREIGN

Cancer Prize Awarded—Prof Ernest L. Kennaway, director of the Research Institute of the Cancer Hospital, London, and J. W. Cook, research chemist at the institute, received a prize of 50,000 Belgian francs and 50 mg of radium offered by the International Cancer Union for scientific work on cancer, *Science* reports. The award was made at the recent Second International Congress on Cancer in Brussels. The prize was made available by the Union Minière du Haut Katanga, a Belgian company that produces a large proportion of the world's supply of radium.

Large Fund for Research at Oxford—Lord Nuffield, British motor car manufacturer, has offered to the University of Oxford the sum of £1,250,000 for the promotion of medical research. It is his plan to provide graduate training in modern methods of investigation in a special research center under the direction of full time university professors and cooperating with existing hospitals to obtain the necessary clinical facilities. The organization suggested is the establishment of clinical departments of medicine, surgery, gynecology and anesthetics to be followed by other departments as they seem desirable as extensions in scope of the medical school and of the Nuffield Institute for Medical Research, which Lord Nuffield gave to the university in 1935. The present gift is said to be the largest ever given by a single donor to any British university.

Personal—The Weber-Parkes Medal and Prize of the Royal College of Physicians has been awarded to Sir St. Clair Thomson, emeritus professor of laryngology and consulting surgeon for diseases of the throat and nose in King's College Hospital, London, for his work on cancer of the larynx. The Moxon Medal was awarded to Dr Edward Mellanby, Sheffield, for his work on the problems of nutrition. — Mrs Irene Joliot-Curie, Paris, has resigned as undersecretary of state for scientific research in the French cabinet. — Dr John W. McNee, at one time associate professor of medicine, Johns Hopkins University School of Medicine, has been appointed regius professor of the practice of medicine at the University of Glasgow, succeeding Prof Thomas K. Monro, resigned. — Sir Grafton Elliot Smith has retired as professor of anatomy at University College, London, and Dr Herbert H. Woollard, professor of anatomy at St. Bartholomew's Hospital Medical School, has been appointed to succeed him.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 26, 1936

Research in Radium Therapy

The Report of the Radium Institute for 1935, just published, contains some important advances in technic.

RODENT ULCER

During 1935, 191 cases of rodent ulcer were treated. They are classified into (1) hypertrophic, (2) superficial ulcerating, (3) superficial cicatrizing and (4) deep ulcerative. Many of the cases were postoperative recurrences and a few were recurrent after x-ray and radium treatment elsewhere. The majority of the cases in the first three groups were treated by unscreened radium by means of flat applicators for from one and one-half to two hours. For the most extensive superficial hypertrophic and ulcerated varieties, radon seeds with a filter of 0.3 mm. and containing 15 millicuries were used. The usual treatment of the deep ulcerative type was gamma radiation by means of radium tubes mounted on stent and Columbia paste wax molds, but needling was done in a few cases. During the past two years a new method has been used for the treatment of rodent ulcers in certain situations mainly extensive ulcers over bone, as in the frontal region over the malar bones and in the mastoid region. The lesion is measured and a rectangular figure is marked on the skin with the lesion in the center and 1 cm. of normal skin between each of its sides and the edge of the lesion. A lead tube with a cross section of 8 mm. and walls of 2.5 mm. containing radon is used for treatment. The active length of the tube is equal to one side of the rectangle and its linear intensity is 10 millicuries. Parallel to the side concerned lines are drawn 8 mm. apart. The tube is covered with strapping and applied along the side of the rectangle. The next field to be treated is the space between this line and the next and so on for the others. For most lesions the exposure is two hours for each field, except the two outer ones for which it is two and one-half hours. After every third exposure the radon tube is made up to its original intensity. The results are good and the technic has the following advantages: 1. The tube, since it contains radon, can be made of any length required. 2. The patient can be treated in two or three days without hospitalization. 3. The reaction is slight and does not keep the patient from work.

THE BLADDER IN CARCINOMA OF THE CERVIX

Valuable information may be gained from inspection of the bladder in carcinoma of the cervix. Since 1933 cystoscopy has been done on the first application of radium. The following appearances in the order of their development as the growth extends to the bladder wall have been observed: (1) bulging and distortion of the base of the bladder, (2) dilatation of vessels, (3) transverse striation, (4) bullous edema and (5) growth in the bladder. Distortion does not necessarily indicate invasion of the bladder wall. It may be due only to pressure when palpation of the anterior vaginal wall will show that the mucous membrane of the bladder moves freely over it. Cystoscopic abnormalities were found in forty-five of 100 cases. Since distortion is regarded as of no significance as regards spread of the disease to the bladder, thirty-eight cases may be said to have shown significant abnormality. Dilatation of the vessels in the bladder base proved to be a bad prognostic sign.

RADIUM BEAM THERAPY RESEARCH

In January 1934 an organization entitled Radium Beam Therapy Research was established in Great Britain to investigate the treatment of cancer by radiation from large quantities

of radium at a distance. The Radium Institute placed at its disposal a treatment room and wards. The organization has its own staff of surgeons, a radium therapist and physicists. In January 1934, after the installation of the first 5 Gm. radium unit and again in January 1936, after the second 5 Gm. unit was installed, an exhaustive series of measurements was made on the intensity of the radiation in the treatment and adjoining rooms. As a result it had been possible to make adequate provision for protecting the staff from radiation. The radiation received by nurses is checked daily by condenser measurements. No ill effects have been observed. Each application of the unit is made by a medical officer. After the unit has been placed in position the patients are under continuous observation by a nursing sister from an observation room at a distance. This is made possible by using a system of mirrors between the observation and treatment rooms. Microphones and loud speakers enable the patients under treatment and the nurse to communicate at will. The apparatus used to contain the first 5 Gm. unit was designed by Sievert of Stockholm. The second was designed at the Radium Beam Therapy Research and has several new features. In the interests of protection the new dense tungsten alloy developed here has been freely used and a rotatable eccentric screen has been provided to secure the maximum protection for the patient. An important advance is perfection of pneumatic transference, so that the radium holder is blown by air pressure to and from the storage safe to the unit. The position of the radium is indicated by lamps on a control panel in the observation room. The system reduces exposure of the staff to zero.

Efforts have been made to devise a scientific scheme of estimating dosage. An instrument designed at the research has enabled extensive investigations into tissue dosage to be made. Before constructing this instrument it was not possible to determine tissue doses either in such detail or with such accuracy. These investigations have proved of inestimable value in developing the treatment and, by placing it on a more scientific basis, in advancing telerradium therapy. Many cases that could not have been treated by any other method have been accepted. The results of the treatment have been sufficiently encouraging to justify the continuance and extension of the research.

Industrial Accidents and Diseases

An increase of factory accidents notified in 1935, amounting to an excess of 9 per cent over those for 1934 and 32 per cent over those for 1933 is reported but can be largely accounted for by increased industrial activity. In 1935 there were 149,696 accidents of which 843 were fatal. Substantial progress in accident prevention has been made in some directions. A comparison of the years 1934 and 1924 shows a reduction of 20 per cent both in the total number of accidents and in the fatalities. The chief inspector of factories is impressed by the active desire of employers' associations to combat the accident menace, especially in the dangerous industries. The principal opportunity for improvement lies in the education of the smaller employers. The returns again show the high rate of accident risks among young workers.

With regard to industrial diseases the chief inspector finds disconcerting the continued high incidence in certain industries of severe epitheliomatous ulceration. He expects little improvement until periodic examination with a view to early detection becomes prevalent. The rapid displacement of sand and flint grit by steel grit and other innocuous abrasives in the dangerous operation of sand blasting is expected to diminish the incidence of silicosis. Some apprehension is expressed as to the effects of speed which is the essence of present day industry. This is exemplified by the conveyor system such as exists in the clothing trade wherein a single operation is performed minute in and minute out throughout the working

day It remains to be seen whether the mental make up of the present generation is such that work of this nature is detrimental or not

Catalogue of Type Cultures

The new catalogue of the National Collection of Type Cultures, containing 2,000 entries, has been issued by the Medical Research Council. These cultures are maintained by the council at the Lister Institute of Preventive Medicine in London. Not only has the number of types increased, but through the cooperation of other scientific institutions it has become possible to include important groups of organisms at present conserved by specialists elsewhere. The following examples show the extraordinary variety and sources of the cultures all over the world. *Actinomyces dasonvillei* Underground. Isolated by J. Graham Forbes from dust of London Tube Railway. *Alternaria* species Ireland. Isolated by Miss Lorain Smith from rotting tent canvas. *Salmonella Derby* Isolated from tank water and from pork pies (cause of thirty-seven cases of pork poisoning). *Verticillium cinereoscens* Isolated from wilting carnations in England. *Vibrio El Tor* Amsterdam. Isolated by Dr. Doorenbos from Mekka pilgrim. *Helminthosporium maequale* Isolated from cranberry by C. L. Shear of Washington, D. C.

The Examination of Elderly Taxicab Drivers

There is an elaborate system of examination to ensure that the drivers of taxicabs who are advancing in life are physically fit. A satisfactory medical certificate is demanded of all original applicants for a license of all licensees who have reached the age of 50, and at each sixth year afterward until the age of 65. After that a certificate is required in the fifth year until the age of 73. After this age medical certificates must be produced every year. In addition to these regular certificates the commissioner of police may, if he thinks fit, call for the production of a further certificate at any time. The proportion of licenses withdrawn from elderly drivers on grounds of health is not large.

PARIS

(From Our Regular Correspondent)

Sept 26 1936

Changes in the French Medical Curriculum

In the July 1936 bulletin of the Association pour le développement des relations médicales appears an abstract of the changes recently made in the attempt to bring the curriculum in the French medical schools abreast of the times. Before citing the essential features of these changes, it may be stated that the association has been highly successful, under the leadership of its president, Prof. Henri Hartmann, in attracting a large number of graduates to the manifold advantages of Paris and other large medical centers (Lyon, Bordeaux, Strasbourg and Montpellier) from a clinical standpoint. The office of the association is in charge of Miss Alice Hure, who speaks English fluently and is thus able to give the necessary information to those who do not speak French. The office is located in the main building of the Paris Medical School (Faculté de médecine).

As to the changes that go into effect this fall, the requirement for admission to the medical school for those who wish to practice in France or its many colonies remains the same, viz., a bachelor of arts degree from a French university. A student who simply wishes to take the courses in the medical school without the license to practice can obtain a "diplôme universitaire" instead of a "diplôme d'Etat," or state license. The latter of which requires a French bachelor of arts degree. In several communications published last year in THE JOURNAL, some recent requirements were cited to the effect that only those born in France or its colonies or those who have been

naturalized can practice here now. Fortunately, the law was not made retroactive, so that physicians and dentists practicing at the time of passage of the law in France can continue to do so.

Every first (preliminary or P. C. N.) year medical student is obliged to devote this period to a course in basic sciences (physics, chemistry and biology) at the University of Paris, which is close to the medical school. The medical course has been extended to seven years (including the preliminary basic science or P. C. N. year). As in the past the clinical work occupies a major part in the program of the medical curriculum in France. In order to emphasize this, those students who are not able to pass the examinations for externships or internships at the large public hospitals must remain attached to some approved hospital during their final or sixth clinical year. The student can elect to spend this year in a service or hospital which specializes in some field so as to begin work as a specialist if he desires.

A noteworthy feature of the medical curriculum which surprises many who visit France is that the mornings are spent by the first and second year students at the various large public hospitals and the afternoons are devoted to anatomy, histology, embryology, physiology, medical physics and chemistry. The claim is made that the student finds that such subjects as anatomy and physiology are of more interest if he has the daily opportunity of observing the clinical application of these fundamentals of medicine. This conception of medical teaching, the report states, is less criticized now than formerly. In a number of foreign countries the question is already being discussed as to whether it is wise to wait until the third year of the curriculum before the student is given bedside instruction.

During the third and fourth years in France the curriculum now includes general and surgical pathology, bacteriology, parasitology, obstetrics, surgical anatomy, operative surgery and experimental medicine, and that of the fifth year includes hygiene, legal medicine, pharmacology and therapeutics. Attendance during periods of two or three months at clinics in general surgery, obstetrics, dermatosyphilology, psychiatry, neurology, pediatrics, contagious diseases, ophthalmology and otolaryngology is compulsory during the third, fourth and fifth years. The effort is made to have the student devote as much time as possible to those of these subjects which will be of the greatest service for general practice. The sixth or hospital year will be spent at hospitals attached to medical schools or approved institutions not so attached or even in a hospital situated in a foreign country.

The system of examinations here differs from that employed in the United States. Intermediate examinations, i. e., during the school year, are not required in any of the clinical subjects, but every student must pass an oral test and, in a few subjects, a written one, at the end of the school year (June or July). At the end of the sixth or hospital year, oral examinations before a "jury" of three professors, as well as those at the bedside, must be passed by every student. In addition, he or she must submit and be ready to defend a thesis based on research or clinical work, before a jury of three members of the faculty. After the second year, every student is eligible to take part in an examination for externships in the many large public hospitals of every large city in France. The successful candidates serve as clinical clerks but are required to pass all final examinations. In addition, an extern can become an intern with added privileges and responsibilities by passing a second competitive rigid series of written examinations. Interns must agree to remain in a hospital for four years. They can select the service which they desire to enter according to their rank in the examinations. As a rule, the internship is a stepping stone to higher positions (also obtainable by competitive tests) such as chief of clinic, associate professor and professor. Thus the majority of interns become

specialists because the opportunities for work in a special field are not to be excelled, by reason of the large number of beds in each service and the well attended outpatient departments.

In the department of the Seine there are 35,000 beds in the various public medical institutions, so that about 800 externs and interns can be selected annually during the second to sixth years of the medical school curriculum. This seems a rather high percentage, but it must be recalled that there is only one medical school in Paris and that the student body averages well over 4,000 annually. Every effort is made here to create a general practitioner and not a specialist or research worker. Perhaps in the future a greater effort will be made to simplify still further the present overcharged curriculum.

The teaching personnel of the various medical schools in France must pass competitive examinations in which the ranking is based not only on the results of the written tests but also on the clinical and research work of the candidate. The same system is used for all appointments on the staffs of the public hospitals. "Agrèges," or associate professors, who thus secure their appointment by competitive examination must remain in this rank for nine years. They are then eligible to promotion to a professorship by election, after submission of a list of previous positions they have occupied and work done. Retirement is compulsory for associate professors at the age of 62 and for professors at the age of 70 years. Diplomas as specialists have been bestowed up to the present time by only a few medical schools in France and these specialties have included only physical education, hygiene, radiology and public school medicine.

Regulations for Public and Private Sanatoriums

According to a law passed by the French senate and chamber of deputies recently every sanatorium for the treatment of pulmonary tuberculosis will be obliged to possess grounds which will suffice to permit the patients to take walks without leaving the premises under control of the institution. Such an area will be in proportion to the number of beds in the sanatorium. A private sanatorium cannot be opened without special permission of the government. This applies also to any changes in construction and increase in the number of beds. Tuberculous patients whose sanatorium costs are paid by the social insurance authorities can be treated only in institutions that are regularly licensed and not indiscriminately in any villa, hotel, boarding house or private resort.

BERLIN

(From Our Regular Correspondent)

Sept. 7, 1936

The Increase in Diabetes Mellitus

Bertram, the Hamburg internist, recently pointed out the need for a systematic prophylaxis since diabetes is on the increase throughout the world. According to his interpretation there exists in addition to the apparent increase in the incidence of the disease, namely, that due to the prolongation of the life span and to better diagnostic and therapeutic methods an absolute increase as well. He visualizes as responsible for this absolute increase a greater consumption of fat, the migration of the population to the cities and the decrease in bodily movement due to modern means of transportation. Almost all cases of diabetes are based on a congenital inferiority of the endocrine system (demonstrated in from 25 to 46 per cent of the cases). Bertram takes the stand that a renunciation (compulsory if need be) of procreation should be required of diabetes mellitus sufferers. For the time being however he discountenances sterilization although he goes so far as to advocate the prohibition of the marriage of any diabetic persons in whom a hereditary familial predisposition is demonstrable even among collateral relatives. He further believes that a like prohibition should apply to persons presenting fairly severe diabetes even

if the familial history is negative. In cases of bilateral hereditary taint, marriage should be interdicted even if neither prospective marriage partner has as yet presented diabetes. Imperiled persons, namely, members of diabetic families, persons who experience occasional elimination of sugar, persons with renal diabetes and certain cases of obesity, should be subjected to continuous supervision. The alimentary functional test with dextrose is recommended as a test of pancreatic function.

For persons threatened with diabetes, prophylactic measures consist in regulation of the habits of life—a regimen of milk and vegetables, abstention from alcohol and tobacco and, on the other hand, participation in sports. A regular leave of absence is necessary as well as vocational guidance. Of paramount importance is the avoidance or a heavy consumption of fats. In the restriction of fat consumption lies the cause of the disappearance of diabetes during the World War. Persons in danger of diabetes should be spared any sort of mental excitement. Infections may frequently induce a diabetes as well as disorders of the gallbladder. In the latter event early operation is indicated, particularly in patients with hereditary predisposition.

Arteriosclerosis is far more likely to be presented by diabetic persons than by those whose metabolism is normal. Bertram sees the cause of this in the generally prevalent carbohydrate-deficient and fat-rich diet that leads to a permanent increase in the cholesterol content of the blood (Aschoff's imbibition theory of arteriosclerosis). The first problem in combating diabetes mellitus particularly in the fight against acidosis, has been solved by insulin. The second problem, prevention of those arteriosclerotic changes so much more prevalent among diabetic patients than among persons of normal metabolism, can be solved according to Bertram's theory, by a general introduction of a diet rich in carbohydrates and deficient in fats. Accordingly he administers daily at least 150 Gm. of carbohydrate and a maximum of 100 Gm. of fat. It can hardly be supposed that the enormous increase in diabetes depends on an increase in the hereditary predisposition. It appears logical and is generally assumed that the tendency to diabetes mellitus is extremely widespread and that this high incidence may be attributed to exogenic influences, principally to a diet rich in fat and deficient in carbohydrate, and to the underexercised condition of dwellers in civilized lands. If the foregoing factors are well comprehended, the outlook for a preventive attack on diabetes will appear more promising.

In discussing these observations which were made before the Medical Society of Hamburg one should mention the fact that Bertram's opinion with reference to the authorization of eugenic measures was by no means concurred in by a majority of his hearers or at least the sentiment was general that judgment be reserved pending further investigation. Bertram's evaluation of excessive consumption of fat in prediabetes is by no means acceptable. The increased fat with diet can be interpreted as a general expression of prediabetic polyphagia and should not be considered unqualifiedly as the cause of the pathologic development. Finally, one must think of the substantial increase in the consumption of sugar as a possible etiologic factor in the greater prevalence of diabetes. As Dr. Scholderer explained pure sugar probably exercises an influence on metabolism entirely disparate from that of carbohydrate as with the latter assimilation first slowly takes place after the decomposition of vegetables.

Recent Developments in Treatment of Thyrotoxicosis

The Berlin Medical Society recently discussed the recent developments in the treatment of thyrotoxicosis from a variety of angles. Professor Siebeck, who spoke as an internist, pointed out that in those conditions of poisoning from the thyroid substance which are called thyrotoxicoses the basal metabolism

erves as a criterion neither of the quantity of these substances nor of the severity of the illness. Likewise there exists no proportionality between the basal metabolism and the iodine content of the blood. The interrelation of disorders of the central nervous system and the hypophysis must be considered as well as the reciprocal effect of the hormone storage in the thalamencephalon. Exophthalmic goiter is no true hyperthyreosis but a disease of another character from thyrotoxicosis. It should be diagnosed only on the basis of a completely developed triad of symptoms. Important in the manifestation of exophthalmic goiter is the constitutional factor, which often presents itself in anomalies of the premorbid personality. Although no specific psychogenic factors are present in exophthalmic goiter, frequent appearances of the illness subsequent to psychic traumas, and especially after those of an erotic nature, have been observed. In the introduction of therapeutic measures a general preliminary treatment and a specific therapy must be differentiated. Of the greatest importance are an adequate psychic quieting, a nonfattening diet rich in carbohydrates with fruit days interpolated and, in addition, phenobarbital. Siebeck observed no particular benefit from administration of vitamin A, though a decrease in the iodine content of the blood and the basal metabolism can frequently be obtained by use of vitamin C. These preliminary measures form the basis of any therapeutic approach and in the milder cases they alone will suffice. The quieting of the patient helps to correct the abnormal activity of the thyroid body. Siebeck considers iodotherapy as the specific treatment. In the coma of exophthalmic goiter, improvement, although manifestly not steady, is observed after large dosages of iodine. The success of iodotherapy depends not on the amount of the dosage but on the preliminary treatment. Individual reactions to iodine vary. Duodotyrosine, in corresponding doses, produces virtually the same reaction as inorganic iodine and this leads Siebeck to doubt that duodotyrosine possesses an antagonistic action toward thyroxine. A further parallel to iodine is to be found in the unreliability of the result. Still, duodotyrosine is innocuous as a therapeutic substance. Digitalis exercises a beneficial effect on the circulation only if administered in large doses and subsequent to the introduction of the general preliminary treatment and iodotherapy. Continued use of quinidine may even do away with pronounced arrhythmias. The permanently successful results of internistic therapy cannot be favorably compared with the results from operative therapy. Surgical intervention is indicated in all quite severe or reasonably severe cases, the patient's general condition being considered the criterion. The operation is dangerous only if the preliminary treatment has been inadequate. The effects of roentgen irradiation are uncertain and even dangerous, favorable reports notwithstanding. Radiotherapy is an innocuous but extremely protracted procedure.

The work of the surgical clinic (Sauerbruch) appears of particular importance in this connection. The preliminary measures correspond roughly to those outlined, the most favorable results are obtained in cases of diffuse, soft, pulsating goiter. Sauerbruch himself discussed some innovations in the surgery of the thyroid body. The results of operative treatment are unquestionably more satisfactory than formerly. In contrast to hyperthyreosis, exophthalmic goiter is a disease of the entire personality which commences with disturbance of the nervous system. Sauerbruch does not perform operations on patients newly come down with exophthalmic goiter. To be differentiated from the psychic form of exophthalmic goiter is thyroid disease induced by a primary disturbance of the endocrine system. The so-called secondary types, toxic thyroid adenomas and thyroid hyperplasias, which frequently appear subsequent to a thyroiditis, are not to be regarded as genuine exophthalmic goiters. Of paramount importance in true exophthalmic

goiter is the determination of the optimal time for operative intervention. As a rule operation should be performed from two to three months after the psychic trauma. Early operative treatment can still heal exophthalmic goiter, since it acts before the changes have become permanent. Moreover, operation for exophthalmic goiter never can be considered a causal therapy. The operation itself is not dangerous if performed under local anesthesia after suitable preliminary psychotherapy, although it gradually has tended to become more radical. The mortality for 294 operations on patients presenting fully developed exophthalmic goiter performed at the Sauerbruch clinic has sunk below 6 per cent, for operations on patients with hyperthyreosis it amounts to only 1 per cent. Irradiation renders the eventually necessary operation more difficult by inducing hyperemia of the capsule, moreover, it is responsible for a mortality of from 14 to 18 per cent. Finally one should remember that there is also a type of hyperthyroidism without goiter; in such cases there is a retrosternal struma.

BELGIUM

(From Our Regular Correspondent)

Sept 1, 1936

Opposition to Women in Competitive Athletics

The commission that has been studying the question of feminine participation in sports has just published a report which may be summarized as follows. Like men, women should be adequately trained to participate in sports by a course of preliminary physical education beginning in childhood. They should be subjected to a rigorous process of classification together with prudent measures for individual orientation. Furthermore, before, during and after the training period and the athletic contest a woman participant should submit voluntarily to medical supervision. A woman may, without danger, undergo the training procedures of a majority of sports. Yet there is no question that those fiercely competitive athletic contests wherein the contestant seeks to make the maximum effort, *per fas et nefas*, may prove harmful to the female athlete since she lacks the muscular force of the male and her organism cannot endure maltreatment with the same impunity as that enjoyed by the male. The female is less able than the male to undergo severe physical and nervous strain, the risk of certain traumas, notably of the thorax and of the abdomen, and the harsh rough and tumble inseparable from certain types of jumping and from certain games.

We consider therefore that only when the greatest precautions have been taken should women participate in high speed racing events (such as foot, swimming, rowing, cycling and skating races). Women should avoid those sports which demand the utilization in a relatively short time of all the organism's reserves, they should not participate in violent and rough jumping in which the fall cannot be broken, nor should they habitually engage in exercises that involve suspension by and leaning on the arms.

There is no doubt that at present all these questions are far from being definitively solved. It is to be hoped that women themselves will undertake to investigate the varied and complex effects of different types of physical exercise and that sportswomen, women athletes and women in general (be they teachers, physicians or professors of physical education) will further interest themselves in these questions so fundamental both for themselves and for the race.

From the standpoint of hygiene, we continue to be opposed to the participation of women in competitive games. We believe, however, that because of its benefit as general propaganda for physical education a certain amount of such participation should be tolerated. But we repeat the importance of a con-

stant and strict medical supervision cannot be overestimated. The observations made at the time of these medical examinations shall permit the assembly in the near future of sufficient material on which to base more exact opinion with regard to which sports should be approved for women and which interdicted. Meanwhile the following division may be accepted as tentative. Sports in which women should not participate are boxing, wrestling, exercises with dumb-bells, football, ice hockey, bicycle racing, pole vaulting, foot racing and ski jumping. Sports in which women may participate are tennis, handball, basketball, cricket, swimming, boating, equitation golf, lacrosse, field hockey, fencing, skiing (without the jumps) skating and javelin hurling.

New Regulations for the Preparation of Bottled Drinking Water

A new ordinance concerning the preparation of drinking water has just been passed. It is an attempt to regulate the delivery pipes, conduits, water tanks and reservoirs so that all possibility of contamination will be excluded. The flow from the conduits must be in proportion to the actual supply used. The working premises shall be reserved exclusively for the manufacture, preparation, placing in receptacles and disinfecting of the utensils and receptacles. These premises as well as the place of storage of the finished products must not communicate directly with any stable or barn, or with any toilet pits for manure, cesspool or place of deposit for decomposing organic matter. The working premises shall be well lighted and well ventilated, kept in suitable condition and arranged so as to permit the rapid efflux of the water. The walls shall be constructed of tile or redecorated with waterproof plaster. The apparatus and the premises shall be washed and cleaned out each day with abundant water immediately following working hours. Even for washing, none but sanitary water shall be used. Carbonating appliances that employ pressure shall be subjected, previous to being placed in use, to a test pressure 50 per cent greater than that which would be required in the ordinary course of operation. They shall, in addition, be equipped with a device calculated to prevent the limit of pressure from being exceeded.

In the preparation and bottling of table waters destined to be placed on sale, and in the commercial manufacture and preparation of ices and lemonades, the following are forbidden: 1. Any apparatus, utensils or receptacles that are soiled or in which the parts in contact with the product are made of wood or contain substances that are poisonous or injurious to the health. 2. Bottles or other receptacles that have not been, immediately prior to filling, thoroughly cleansed or sterilized, rinsed with water pure enough for drinking purposes and emptied again. The washing of receptacles both outside and inside must take place before every filling and in such a way as to remove all impurities and deposits. This washing process must be followed by an abundant flushing with constantly renewed pure water. The bottling shall be immediately followed by the stoppering and capping. These processes must be effected by means of a device that is not in direct contact with the receptacles.

Persons employed in the preparation of drinking waters must be free from infectious disease; they must further be properly attired and scrupulously clean, above all with reference to the hands and nails. It is forbidden to prepare or to place in receptacles for marketing any water that does not come from a spring, a reservoir, a well or a public water main. The same prohibition applies to the commercial manufacture and preparation of ices or lemonades. Water must not be brought to the preparation and bottling plant except by an air-tight channel connecting directly with the reservoir, well or stream. In the commercial preparation of table water and lemonades and

in the manufacture of ices the use of the following is forbidden: (1) poisonous substances, (2) substances that have been declared noxious by the proper supervisory authorities, (3) antiseptics, (4) saponins, (5) mineral acids and (6) carbonic anhydride containing nitrogen, sulfur and hydrocarbon derivatives.

Silicosis Among Glassmakers

Drs. Courtois and Leclercq have reported to the Belgian Society for Tuberculosis Research the results of their observation of glassmakers in the Charleroi region. The nature of the work and the working conditions are described. Among the plants investigated was a glass factory at Jumet in which the old procedures of gathering and blowing were still employed for the manufacture of colored glass. As a matter of fact, the entire report resolved itself into a consideration of the manufacture of glass in the old way, the workers examined being for the most part elderly persons who had learned their métier before the advent of machine-made glass.

The atmosphere of the glass works seemed to contain only a small quantity of dusts and gas, except in the drying room, where conditions appeared more unhealthful. The lesser degree of active combustion in the ovens in this room made it possible that incompletely burned gases such as carbon monoxide might be inhaled together with sooty dusts. It was further observed that the heating process involved an exposure to inhalation of sand particles.

An exhaustive analysis of these dusts showed the particles to be relatively large, so large in fact that only 14 per cent of the particles were less than 10 microns in diameter (the maximal dimension of any object that could find its way into the lower respiratory passages).

An examination was made of eighteen workers, including five glass-blowers (representing forty-one, forty, thirty-six, twenty-seven and twenty-six years of work), three gatherers (thirty-six, thirty-five and twenty-five years of work), five cutters (thirty-six, thirty-six, twenty-three, twelve and ten years of work), two grinders (twenty-four and twenty years of work), one storekeeper (fifty years of work), one gas man (twenty-five years of work), one beveling assistant (fifty years of work). The investigation disclosed only one case of silicosis and this was in a man aged 61, who presented the classic clinical, physical and radiologic syndrome: cough, expectoration of mucus, dyspnea, and scattered dry and sibilant rales; the roentgenogram showing the entire pulmonary region studded with extremely fine nodular opacities. The authors, however, still found it necessary to make reservations with regard to this single case, since diagnosis must be 'etiologic' as well as clinical and radiologic and here strangely enough, the apparent victim of silicosis was the storekeeper who for fifty years had worked in the least unhealthful spot of the glass factory (the warehouse).

Silicosis then may possibly occur as an occupational disease among glassworkers although such cases are extremely rare. The fact evidenced by statistics that many glassworkers die prematurely cannot therefore be attributed to silicosis but quite decidedly to the cardiopulmonary disorders to which their métier particularly exposes them and with which they appear so frequently to be afflicted. Tuberculosis, like silicosis, is seldom encountered among this group. One should remember that glassworkers formerly constituted a sort of aristocracy among the working class; they were well paid, well fed and well housed. Hence the social background fails to present the pathogenic factors that underlie the manifestation of infectious bronchopulmonary diseases.

In concluding their discussion, the authors emphasize the complexity of the diagnostic problem in silicosis research, even when the disease is definitely recognized as occupational in origin.

Marriages

ROBERT EDWIN WRIGHT, East Orange, N J to Miss Marjorie Eloise Coffman of Orange at Glen Ridge, August 22

EARL S HALLINGER JR Wildwood, N J to Miss Sylvia Hoffman of Cleveland at Harrison N Y, September 23

WILLIAM K. SENNETT, Macy, Ind, to Miss Gladys Baxter of Shelbourne in Indianapolis, September 17

FRANK HART PETERS to Miss Madeleine Henriques, both of New York, in Princeton, N J, September 5

ROBERT JEROME PARSONS, New York, to Miss Fannie Bach of New Canaan, Conn, September 12

JAMES GRAHAM SHAW, Columbia, S C to Miss Marie Lee Keiley of Richmond, Va, August 28

PAUL ANTHONY O'CONNOR to Miss Katherine Fissell both of Newark, N J, August 22.

CARL M PORTER, Jasonville, Ind, to Miss Rosalind English of Clay City recently

Deaths

James Clifford Perry * Medical Director U S Public Health Service, San Francisco, University of Maryland School of Medicine, Baltimore, 1885, was appointed assistant surgeon in 1889, passed assistant surgeon in 1893, surgeon in 1904 senior surgeon in 1915, assistant surgeon general in 1918 and since 1930 medical director of the U S Public Health Service organized a protective quarantine at Hongkong, China, in 1899 governing vessels for the United States ports organized quarantine service in the Philippine Islands and was chief quarantine officer from 1900 to 1903 served as chief quarantine officer on the sanitary staff of the Isthmian Canal Commission from 1905 to 1914, was health officer of the City of Panama from 1909 to 1914, later made special investigations in Chicago, Richmond Ind and Columbia, S C, and served as chief medical officer at Ellis Island member of the American Public Health Association and the Society of Tropical Medicine and Hygiene of London, aged 73, died suddenly, October 19, on the steamship *District of Columbia*

Frederick William Marlow, Toronto Ont, Canada Trinity Medical College Toronto 1900 L R C P, London, and M.R.C.S, England, 1902, F.R.C.S, England, 1903, in 1913 was appointed associate professor of gynecology, and from 1903 to 1906 demonstrator of anatomy at the University of Toronto Faculty of Medicine, past president of the Ontario Medical Association and the Academy of Medicine, one of the founders and fellow of the American College of Surgeons, served with the Canadian army during the World War, senior attending gynecologist to the Toronto General Hospital, member of the surgical staffs of St John's and the Wellesley hospitals, aged 59, died, August 22 at Knollview, his farm in Scarborough

Homer Dupuy * New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1897 professor of otorhinolaryngology, Louisiana State University Medical Center assistant professor of otorhinolaryngology, New Orleans Polyclinic, from 1900 to 1915 professor of oral surgery, Loyola University, from 1925 to 1930 past president of the Louisiana State Medical Society and the Orleans Parish Medical Society assistant surgeon, Ear, Nose and Throat Hospital from 1899 to 1915 senior visiting surgeon division of otorhinolaryngology, State Charity Hospital since 1915 aged 65, died September 28

John English McWhorter, Tenafly, N J Columbia University College of Physicians and Surgeons New York 1898, assistant professor of clinical surgery at his alma mater and assistant professor of surgery, University and Bellevue Hospital Medical College, New York member of the American Association of Pathologists and Bacteriologists, surgical pathologist to the Bellevue Hospital pathologist to the French Hospital and Hospital for Ruptured and Crippled, consulting pathologist to the Home for Incurables New York, and Englewood (N J) Hospital, aged 61, died, September 19

Albert Belcham Keyes, Chicago, Chicago Medical College 1890, formerly assistant professor of obstetrics and gynecology Rush Medical College, and professor of gynecology at the Chicago Polyclinic fellow of the American College of Surgeons, served during the World War gynecologist to the

Henrotin Hospital and the Chicago Maternity Hospital, aged 74, died, October 11, at his home in Evanston, Ill, of cerebral thrombosis

Howard Earl Marchbanks * Pittsburg, Kan, University of Kansas School of Medicine, Kansas City 1916 member of the Central Society of Clinical Research, fellow of the American College of Physicians chairman of the medical advisory board of the Crawford County Red Cross, served during the World War, on the staff of the Mount Carmel Hospital, aged 48, died, August 7, of coronary occlusion

Bernhard Ernst Knolle, Industry, Texas, Tulane University of Louisiana Medical Department, New Orleans 1886, past president of the Austin County Medical Society, formerly county health officer, president of the board of trustees of the school board president of the staff of the Sarah B Milroy Memorial Hospital, Brenham, aged 69, died, August 20, of peritonitis following appendicitis

Arthur J Puls, Milwaukee, Universität Heidelberg Medizinische Fakultät, Heidelberg, Baden, Germany, 1883, fellow of the American College of Surgeons gynecologist to the Columbia Hospital and the Milwaukee County Dispensary member of the board of regents of the University of Wisconsin Madison, from 1902 to 1908, aged 79, died, August 10, of carcinoma of the prostate.

William R Quick, Delphi Ind Kentucky School of Medicine, Louisville, 1891, member of the Indiana State Medical Association, formerly secretary of the Carroll County Medical Society, member of the school board city health officer, and at one time county health officer, aged 74, died, August 20, in a hospital at Lafayette, of carcinoma of the bladder with metastasis

James Albert Knox * Waynesburg, Pa Western Pennsylvania Medical College, Pittsburgh, 1903, past president of the Greene County Medical Society, member of the staff of the board of directors of the Greene County Memorial Hospital bank president member of the board of directors of the Waynesburg College, aged 58, died suddenly, August 10, of acute coronary thrombosis

John Ralph Neely, Spokane, Wash Howard University College of Medicine Washington, D C, 1887 Georgetown University School of Medicine, Washington, D C, 1891 member of the Washington State Medical Association, for many years a member of the city health department, aged 77 died recently in London, England, of heart disease and diabetes mellitus

William Henry Jamieson * Ottawa, Ill, Rush Medical College, Chicago 1910 president of the medical staff of the Ryburn Memorial Hospital formerly on the staff of the Ottawa Tuberculosis Sanatorium member of the school board aged 59, died August 9, in the State of Wisconsin General Hospital, Madison, of coronary thrombosis

Eugene Clower, Cairo Ga, Atlanta College of Physicians and Surgeons 1902, member of the Medical Association of Georgia, past president of the Grady County Medical Society, on the associate staff of the John D Archbold Memorial Hospital Thomasville, aged 60, died, August 19, of cerebral hemorrhage

Seymour Rowland Lee, St Paul University of Illinois College of Medicine, Chicago 1927, member of the Minnesota State Medical Association superintendent of the Ancker Hospital and formerly superintendent of the Willmar (Minn) State Asylum, aged 36, died, August 10, following an operation for appendicitis

Uriah Agrippa James Pittston, Pa University of Pennsylvania Department of Medicine, Philadelphia, 1899, member of the Medical Society of the State of Pennsylvania, on the staff of the Pittston Hospital aged 58, died suddenly, August 3, at his summer home at Lake Winola of coronary thrombosis

Emerson William Goldman, Madison, S D Lincoln (Neb) Medical College of Cotner University 1903 member of the South Dakota State Medical Association state senator, on the staff of the Madison Community Hospital, aged 56, died August 8 of chronic myocarditis

Jacob Livingston * Newark, N J Johns Hopkins University School of Medicine, Baltimore, 1920, on the staffs of the Beth Israel and Presbyterian hospitals aged 42 was drowned August 23, at Lake Hopatcong when he fell accidentally from his motor boat

Thomas Mortimer Lloyd, New York University of Pennsylvania Department of Medicine Philadelphia 1876 at one time on the staff of St. Peter's Hospital Brooklyn aged 81 died August 21, in Bellport L I, of carcinoma of the prostate and diabetes mellitus

James Arthur Sullivan Howell, Elgin Ill. College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1891, served during the World War, aged 65, died, August 18, in St. Joseph's Hospital, of carcinoma of the prostate

William Wooldredge Dodge, Hamilton, Mass. Harvard University Medical School, Boston, 1886, member of the Massachusetts Medical Society, aged 79, died, August 11, in the Beverly (Mass.) Hospital, of arteriosclerosis and bronchopneumonia

Theophilus Lacy Mastin, Huntsville, Ala. University of Pennsylvania Department of Medicine, Philadelphia, 1902 member of the Medical Association of the State of Alabama aged 62 died, August 3, in the Huntsville Hospital of uremia

William A. Martens, Milwaukee Milwaukee Medical College, 1903, member of the State Medical Society of Wisconsin, aged 58, died, August 3 in Rochester, Minn., of subdural hemorrhage due to an automobile accident, and bronchopneumonia

John T. Freeman, Finley, Tenn., Mississippi Medical College, Meridian, 1910, member of the Tennessee State Medical Association, county health officer, chairman of the county school board, aged 50, died, August 7, of cerebral hemorrhage

William Elias Hedges, Portland, Ore. Chicago Homeopathic Medical College, 1904, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, aged 61 died, August 8, of coronary occlusion

William Humphrey Drewry, Charlotte N. C., Medical College of Virginia, Richmond, 1926, member of the Medical Society of the State of North Carolina aged 35, died, October 1 in a local hospital, following an operation for appendicitis

Carl Ludvick Sandberg, Salt Lake City Northwestern University Medical School, Chicago, 1908 veteran of the Spanish-American and World wars, on the staff of St. Mark's Hospital aged 58 died, August 14 of coronary occlusion

John Robert Hicks, Tulare, Calif., Central College of Physicians and Surgeons, Indianapolis 1897 member of the California Medical Association at one time a member of the state board of health of Indiana aged 65, died August 1

Thomas Edward Hoxsey, Spokane, Wash., Barnes Medical College St. Louis, 1900 aged 62 on the staffs of the Sacred Heart Hospital and the Deaconess Hospital where he died August 23, of coronary occlusion and hypertension

Marcus Keen Mines, Camden N. J., Jefferson Medical College of Philadelphia, 1892, at one time chairman of the city board of health formerly on the staff of the Municipal Hospital aged 67, died August 25, of myocarditis

Corwin Luctus Maxwell, Myra Texas Vanderbilt University School of Medicine, Nashville, Tenn. 1898 past president of the Cooke County Medical Society aged 65 died August 18, of carcinoma of the gallbladder

George Marcus Crowell, Suncook N. H. Harvard University Medical School Boston, 1899 member of the New Hampshire Medical Society aged 64, died, August 11, in Pembroke of organic heart disease.

Clarence Edwin Gourley, Mingo Junction Ohio Ohio Medical University Columbus 1903 member of the Ohio State Medical Association for many years a member of the school board, aged 60, died, August 11

Samuel Howard Ezzell, Lancaster S. C. Atlanta College of Physicians and Surgeons, 1900 member of the South Carolina Medical Association aged 64 died, September 23, in a hospital at Rock Hill of uremia.

Arthur Everett McCarthy, Buffalo University of Buffalo School of Medicine, 1899 served during the World War aged 59 died August 6 in the Buffalo General Hospital, of carcinoma of the sigmoid

Lucy MacMillan Elliott Guldbrandsen, Oakland Calif. University of Michigan Medical School Ann Arbor 1915 aged 50 died August 18 in the University of California Hospital San Francisco

Leonard Eric de Chantal, Wallingford Conn. McGill University Faculty of Medicine, Montreal Que. Canada, 1918 aged 46 died August 2, in Albuquerque N. M. of pulmonary tuberculosis

Savala Eustace Gunn, Hopewell Va. Medical College of Virginia Richmond 1926, served during the World War aged 44 died August 26 in a hospital at Petersburg of acute pancreatitis

William Francis Hager, Pana, Ill., Barnes Medical College, St. Louis, 1908 and 1909, on the staff of the Huber Memorial Hospital, aged 55, died, August 10, of coronary thrombosis

Charles T. Dyess, Clewiston, Fla., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912, aged 53, died August 19, in Fort Myers, of pernicious malaria and hepatic cirrhosis

William Frederick Aloysius Gillan, Quincy, Mass., Tufts College Medical School, Boston, 1898, aged 72, died August 14 in the Quincy City Hospital, of myocarditis and arteriosclerosis

Charles Parker Maddux, Imola, Calif., Cooper Medical College, San Francisco, 1898, on the staff of the Napa State Hospital, aged 64, died, July 3, of myocarditis and arteriosclerosis

Guel George Morehouse, Owatonna, Minn., Bennett College of Eclectic Medicine and Surgery, Chicago, 1902, aged 59 was found dead in bed, August 31 of chronic myocarditis

Louis Augustus Sanders, Hazlet, Ind., Medical College of Indiana, Indianapolis, 1888 formerly county health officer, aged 82, died, August 10, of carcinoma of the prostate.

Marcus C. Hunter, Huntersville, N. C., College of Physicians and Surgeons, Baltimore, 1882, for many years bank president, aged 78 died, August 3, of myocarditis and uremia.

John S. Ragan, Plainfield, Ind., Medical College of Indiana, Indianapolis, 1879, for many years physician to the Indiana Boys School aged 87, died August 20, of arteriosclerosis

Augustus M. Johnson, Arenzville, Ill. St. Louis College of Physicians and Surgeons, 1898, aged 61, died, August 14 in a hospital at Beardstown, of multiple cerebral infarcts

Ira Timothy Johnson, Rochester, N. Y., Bellevue Hospital Medical College, New York, 1889, aged 73 died, August 4 of carcinoma of the larynx and acute myocarditis

John Kerr Crawford, Somerville, Tenn. Vanderbilt University School of Medicine, Nashville, 1904, aged 58, died, August 7, in a local hospital of cholecystitis

Grape Frank Keller, Oklahoma City, University of Oklahoma School of Medicine, Oklahoma City, 1934, aged 44, died, August 12 in a local hospital, of septicemia

Enos H. Leaman, Philadelphia, Temple University School of Medicine, Philadelphia, 1910, aged 69, died, August 8, of paralysis agitans and cardiovascular disease.

Joseph B. Chapman, Seattle, Washington Brochemic Medical College, North Yakima, 1889 aged 73, died, August 15 of cerebral hemorrhage and arteriosclerosis

Edward Newton Flint, Chicago, College of Physicians and Surgeons of Chicago, 1887 aged 72, died, August 31 at the Ravenswood Hospital, of myocarditis

George Shelley Everhart, Hagerstown Md. Southern Homeopathic Medical College, Baltimore, 1897, aged 65 died August 21, as the result of mastoiditis

Simon W. Royer, Wichita, Kan., Kansas City Homeopathic Medical College, 1894, aged 83, was found dead, August 14 of coronary thrombosis

Seymour F. Hinson, Newbern, Tenn. University of Tennessee Medical Department, Nashville, 1899, aged 65, died August 3, of coronary thrombosis

Mary Grace Haskins, Bridgewater Conn. Woman's Medical College of Pennsylvania Philadelphia, 1901, died August 1, of cerebral thrombosis

William Bradley Brock, Oakville, Iowa College of Physicians and Surgeons of Chicago 1886, aged 75 died, August 26 of coronary thrombosis

Arthur C. Sells, Aledo Ill. Keokuk (Iowa) Medical College 1892 member of the Illinois State Medical Society, aged 65, died July 10

Henry Farrell, McCook, Neb., Baltimore Medical College, 1907, aged 58, died, August 3, of coronary occlusion and diabetes mellitus

Joseph E. Schallmo, Chicago, Loyola University School of Medicine Chicago, 1916 aged 62 died, August 5 of chronic myocarditis

William M. Boone, Highland Kan. College of Physicians and Surgeons, Baltimore, 1891 aged 76, died August 6 of coronary occlusion

Alvin McPhee Warner, Vancouver B. C., Canada, Queen's University Faculty of Medicine, Kingston Ont., 1912, aged 52 died July 18

Herbert Marcus McKenzie, Evansville, Ind., Rush Medical College 1874 aged 85, died July 15

Correspondence

NECROSPERMIA AND VIABILITY OF SPERMATOZOA IN THE CERVICAL CANAL

To the Editor —It is now over twenty years since my book on sterility (*Sterility in the Male and Female*, New York: Rebman Company, 1913) was published in which I gave the results and statistics of my study of the behavior of spermatozoa in the female genitals in hundreds of cases in normal and pathologic conditions of the female genitals. This was the first attempt ever made to study spermatozoa in the female genitals in a systematic manner and in a large number of cases, although a few observations had been made by previous writers. This book was followed by various articles in medical journals and culminated in using this method in the diagnosis of both male and female sterility. This procedure I designated as the cervix test (*The Practical, Scientific Diagnosis and Treatment of Sterility in the Male and Female*, *M Rec* May 9, 1914) and later as the spermatozoa test (*The Value of the Spermatozoa Test in Sterility*, *Urol & Cutan Rec* November 1914) but Reynolds in 1915 (Reynolds, *Edward* *Prognosis of Sterility*, *THE JOURNAL*, Oct. 2, 1915, p. 1151) referred to it as the Huhner test, by which name it is now known not only in America but also abroad.

In the May 16 (p. 1728) issue of *THE JOURNAL* appears a preliminary report by Dr. Frances I. Seymour on the "Viability of Spermatozoa in the Cervical Canal." My observations were made at various periods after coitus and have the distinct advantage of testing the husband's semen in the genitals of his own wife. After all, in the vast preponderance of cases, pregnancy is the result of coitus between husband and wife, and such observations therefore are of much greater value than if made after the unusual procedure of artificial insemination. All my observations were made in cases of sterility and I succeeded in finding live spermatozoa in the cervix of a woman five days after coitus and dead ones in the fundus as long as seven days after coitus.

The writer apparently tried to relieve sterility by artificial impregnation, using semen from some one not the husband of the patient. I have had the same request made to me by many an anxious patient with sterility but always refused. Not only must it be determined beyond the question of a doubt that the donor is free from gonorrhea and syphilis, but one must know the entire life history not only of the donor but also of his ancestry to rule out such conditions as insanity and epilepsy. To my mind the bringing into existence of a new life is a solemn and serious problem, and the fact that a certain donor is a good breeder adds nothing to our scientific knowledge as we often see about us numerous instances in which a husband is constantly impregnating his wife.

I wish to commend the doctor in making the injections only into the cervix and not into the fundus. The injection of semen into the fundus is a more or less risky procedure, as there exists no known method of sterilizing semen without killing the spermatozoa. I believe that in the ordinary act of coitus the cervical secretions seem to have the power to keep back most of the ordinary bacteria which may accompany the semen and allow only the spermatozoa to pass upward. What we want to know from a purely practical standpoint is what happens to spermatozoa which enter the female genitals during ordinary coitus, and not what happens to them if brought in by the artificial method of a cannula. Obviously, in the preponderance of cases pregnancy follows ordinary intercourse.

Coming now to the article by Dr. Cary which appeared in the June 27 issue (p. 2221) of *THE JOURNAL*, I wish to call attention to one important point which Dr. Cary cites in dis-

agreement with the conclusions made by me in my observations. Dr. Cary states (p. 2222) that in 1929 he was inclined to agree with me that active sperm cells in the cervical mucus indicated the fertility of the husband, but at present he doubts this conclusion for the reason that motile sperm cells have been found in cases in which a direct male specimen was considered as deficient. This is certainly an interesting statement in view of the fact that my article "Methods of Examining for Spermatozoa in the Diagnosis and Treatment of Sterility" published in the *New York Medical Journal* May 4, 1921, called attention to this very fact, citing it as a distinct value of my test as compared to a condom examination. For over twenty years I have been emphasizing that no complex chemical examination of the female genital secretions, no watching the spermatozoa under the artificial conditions of the microscopic stage, no counting of abnormal spermatozoa can give the practical information regarding the value of the seminal secretion in fertility compared to that of the direct examination of the spermatozoa procured from the female genitals after connection. Many years ago I cited cases in which I removed live spermatozoa from the female cervix many days after coitus, and yet these very spermatozoa died quite rapidly on the microscopic slide. Were we to judge from the behavior of these spermatozoa on the slide under the microscope we would put them down as of very poor quality, yet the fact that they had retained their vitality within the female genitals for days shows that they were of good vitality. True, experiments in animals seem to indicate that motility and fecundating power in spermatozoa are not synonymous, yet this fact cannot vitiate the results and observations mentioned.

I wish to record a most important observation concerning spermatozoa as evinced in one of the most disappointing conditions met by the specialist, namely, that of necrospERMIA. The cause of necrospERMIA may at times challenge the most painstaking investigations of the male sex organs. At times one does find a markedly congested prostate and prostatic urethra, the relief of such congestions being followed by the cure of the necrospERMIA. But such cases are by far in the minority. At times one meets cases that are apparently testicular in origin, for large doses of the anterior lobe of pituitary extract relieves the condition. There are of course cases of artificial necrospERMIA to which I have frequently called attention, namely, those instances in which the patient, in his enthusiasm to prevent the condom specimen from becoming too cold, either puts the condom containing the specimen in a jar of supposedly warm water while en route or puts the condom enclosed in a towel on a warm radiator or hot water bag. In all these cases the heat is much higher than anticipated and all the spermatozoa are dead when they reach the office. I have for many years called attention to this artificial necrospERMIA and have emphasized the fact that, while spermatozoa may stand a large amount of cold, the least amount of heat above the normal will kill them at once and permanently. Then once in a while a case appears in which the necrospERMIA is caused by some powder which the condom manufacturer has placed in it to ensure its easy application. For many years I have advised my patients to wash the interior of the condom to get rid of any possible obnoxious powder. But the fact remains that even if all these causes have been eliminated there still remains the largest number of cases of necrospERMIA in which the most painstaking examination will neither determine the cause nor will a cure of this condition be achieved by any method of treatment.

The up to date gynecologist at present will refuse to treat any woman for sterility (in the absence of any other symptom) before he is certain that the husband is normal. He therefore examines a condom specimen, and when he finds that all the spermatozoa therein are dead he advises the patient to have

her husband examined by a urologist to get rid of this important impediment to conception. But, as previously mentioned, the urologist in the vast majority of cases fails either to find the cause or to cure the condition.

I have found quite a few cases in which others as well as myself have repeatedly examined many condom specimens under the most favorable conditions and with all due precaution but always found only dead spermatozoa (even though the specimen was examined within twenty minutes of coitus) and yet a post-coital examination showed numerous normal spermatozoa. In some of these cases the spermatozoa removed from the female genitals after coitus remained alive for several hours under the microscope and yet the direct condom specimen examined only twenty minutes after coitus showed only dead spermatozoa. It may be that in some cases there is an antagonism between the material the condom is made of and the spermatozoa, although in several cases I have advised the patient to use an entirely different brand of condom without result. It may also be that in these particular cases the mere shaking up of the condom contents while en route may have the deleterious effect, although in thousands of other condom specimens examined by me and subjected to greater agitation no disturbance of the motility of spermatozoa was noticed.

I have had cases in which the woman had sought relief for her sterility for a long time, but, as this was the sole symptom the experienced gynecologist wisely refused to do anything as long as it appeared that the husband was obviously at fault. In some cases the gynecologist easily diagnosed a more or less infantile or undeveloped state of the female sex organs but it would be unwise to try to overcome this condition which might necessitate months of treatment as well as expensive endocrine injections when the husband appeared to be obviously at fault and the condition in the wife caused absolutely no annoyance aside from the sterility. It may therefore be laid down as an axiom that in every case of necrospermia a Huhner test should be made to establish a definite diagnosis.

This observation adds another interesting chapter to the contention I have so often made that no observation of a condom specimen, no matter by what method examined, can give such a definite diagnosis as can be made in many cases by examining the spermatozoa removed from the female genitals after coitus.

MAX HUHNER, M.D., New York.

EFFECTS OF BENZEDRINE ON BLOOD PRESSURE

To the Editor—Of possible interest to medical examiners for life insurance companies is this personal experience. In applying for additional insurance I had the usual examination but the policy applied for was refused on the basis of hypertension. Blood pressure examinations had been made in New York and in Chicago at frequent intervals for several years in the past and ran about 135/88. The age is 55. When the adverse report was made a rereading from the first found, 160/98 gave 140/90 the following day. Subsequent readings ran along 135-138 systolic. Because of nasal congestion, I have used various commercial vasoconstricting preparations, such as ephedrine, epinephrine and more recently a volatile drug introduced by breathing through a small tube, made by a well known Philadelphia pharmaceutical house. As an experiment I used this tube according to directions and had my blood pressure read by the original medical examiner who found it 172/105. Two days later it was 135/87. The record of frank hypertension remains on the books of the insurance clearing house but a policy has been issued as applied for because the physicians are convinced that the nasal drug was the source of the anomaly.

WITHEROW MORSE, PH.D., Chicago.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

EFFECTS OF TIN CONTAINER ON CANNED FRUITS AND VEGETABLES

To the Editor—Can you give me the scientific evidence either confirming or refuting the popular belief that any canned goods (meat, vegetables, fruit juices) if left in the original container will develop toxic properties for that reason? It seems to be the custom to empty any tin can as soon as opened and put its contents into some much less sterile container. Outside of the possible addition of a few iron oxides is there any absorption of heavy metals from the can? Please omit name if published.

M.D. District of Columbia

ANSWER.—Spoilage is caused by bacteria, yeasts or molds, everywhere present in the air and often carried on the hands of those handling the foods. So long as food is in a can that is sealed air tight it cannot be contaminated. Open the can and the food is at once exposed to contamination from the air and from the handling it receives. Putting the food in an open earthenware, glass or enamel vessel, even though that vessel is thoroughly cleansed, does not protect it against the spoilage organisms in the air. Such food in open vessels will spoil just as quickly as if it were left in the open can.

Food cans are made of sheet iron, coated with a thin layer of tin. Some acid foods such as grapefruit, peaches, pine apples and tomatoes, if left in a can when exposed to the air, tend to act on the metal of the can. Dissolved iron may give the contents of the can a slightly astringent or "metallic" taste. Any tin dissolved in the food would have no taste and even if all the tin on the inside of the can were dissolved the amount of tin which the food would contain would be small and there is no evidence that such tin compounds as may be present in canned foods are harmful.

The U. S. Department of Agriculture has recently made a study of the effects of feeding canned foods containing known amounts of tin. The results of this work have been summarized as follows by the Bureau of Chemistry and Soils: "Our own experimental work, involving the ingestion of far larger amounts of tin than any previously reported, and supported by the experimental evidence of other investigators, leads us to the conclusion that tin, in the amounts ordinarily found in canned foods and in the quantity which would be ingested in the ordinary individual diet, is for all practical purposes eliminated and is not productive of harmful effects to the consumer of canned foods."

NOCTURIA

To the Editor—Can you suggest something for symptomatic relief of persistent sleep-shattering nocturia? I realize that the primary aim is to treat the cause (high blood pressure, bronchiectasis, nephritis and so on) but the usual measures for these have not been entirely successful and the patient begs for symptomatic relief. Another patient, not an invalid has the same difficulty the chief underlying cause being arteriosclerosis. Any suggestions you may have will be appreciated. Please omit name.

M.D. Pennsylvania.

ANSWER.—It is questionable whether such severe nocturia can be caused alone by any of the conditions mentioned, namely, high blood pressure, nephritis, arteriosclerosis or bronchiectasis. Nocturia is often present with some types of nephritis and with vascular disease, but it seldom is the only cause of a distressing polyuria or of very frequent micturition.

It would seem probable that there is some cause other than those mentioned to account for the distressing nocturia described. It would be difficult to determine the etiologic factors without a careful examination of the entire genito-urinary tract. Such examination should first include a urinalysis. It is to be remembered that the absence of pus in the urine does not necessarily exclude infection, since bacteriuria may be the cause of frequent micturition. A gram stain of the sedimented urine should be made and carefully examined for bacteria, and cultures of the urine also should be made. The hydrogen ion concentration of the urine should be determined since occasionally a hyperacid condition of the urine will cause irritation which can sometimes be relieved by the administration of sodium bicarbonate. The possibility of pressure on the bladder or

irritation by some extravasical condition should next be considered and excluded. A study of the prostate and its secretion is of importance to exclude the possibility of retention of urine or of prostatic infection. A cysto urethroscopic examination may be necessary to exclude the possibility of a lesion in either the bladder or the urethra. It is taken for granted that a roentgenogram has been made of the urinary tract, to exclude the possibility of lithiasis, which may be accompanied by no other symptom than nocturia.

If such examinations prove to be negative, all fluids should be withheld from the diet of patients after 4 o'clock in the afternoon. This will necessarily be followed by a reduction in the amount of nocturnal renal excretion.

LOSS OF BASES IN ACIDOSIS

To the Editor—It appears that in spite of the body's mechanism for combating acidosis by the buffers of the plasma and the auxiliary mechanism of renal oxidation and excretion of ketone bodies with increased ammonia formation there is in diabetic ketosis an actual loss of base in the urine. I infer from the sources consulted that sodium and potassium are among the bases lost in addition to ammonia. Can you tell me in what form this sodium appears in the urine? Is it conjugated in some way with the ketone bodies or is it in the form of phosphates? Is there an accompanying loss of chlorine with this loss of sodium as in the dehydration accompanying cortical insufficiency? 2. Can you give me the references to the more significant observations on chloride retention in pneumonia and the changes in sodium and chloride balance that occur before and after the crisis? I know that some work has been done by Sunderman and by Mackay and Butler in infections of the upper respiratory tract but I cannot find the references. Please omit name.

M D Massachusetts

ANSWER—1 A certain amount of the ketone bodies can be disposed of by oxidation in the tissues excretion as free acid, and excretion in combination with ammonia. When in the course of diabetes ketone acids in excess of this amount appear, the various fixed bases of the blood (chiefly sodium) are drawn on to neutralize the acids and are excreted with them. The chloride liberated by the removal of the basic radicals is largely excreted as ammonium chloride. Thus there are losses of both the basic and chloride ions as a direct consequence of the appearance of excessive amounts of the ketone acids. The marked diuresis and also the vomiting, which almost invariably accompanies diabetic acidosis, constitute other routes of salt loss. In these phenomena the ions may leave the body in their usual combinations.

2. Sunderman F W J Clin Investigation 9 615 (Feb) 1931
Fowler A F Canad M A J 32 482 (Mar) 1935
Peters J P Body Waters, Baltimore Charles C Thomas 1935

HAY FEVER IN WASHINGTON AND CALIFORNIA

To the Editor—Can you advise me concerning the hay fever situation due to ragweed throughout the states of Washington and California? Also advise me concerning the severeness of their winters. Is the climate such that a patient with neuritis could be advised to take up residence in either state?

W E. DELICATE M D Edwardsville Ill

ANSWER—Atmospheric studies made at Seattle and Portland reveal the total absence of ragweed pollen from the air of these cities. This applies not only to the various ragweeds but to such related pollens as that of sagebrush. The results of the atmospheric studies are confirmed by local observation on the part of a number of investigators and are doubtless an index of conditions in the region west of the Cascade Range. Both ragweed and sagebrush are found in eastern Washington, but atmospheric contamination is much lower than in Illinois.

Average minimum winter temperatures for central eastern Washington are about the same as they are in the correspondent's city whereas in western Washington the average minimum winter temperature is only 2 degrees below freezing. Thus it would seem that western Washington would be the more favorable part of the state unless the cool summers and more moist winters, compared with southern Illinois would be undesirable on account of their possible effect on neuritis.

No part of California is entirely free from ragweed but, as in eastern Washington, atmospheric pollen contamination is low at least in the places which have been studied, namely, Sacramento, San Francisco, Oakland, San Joaquin County, Los Angeles and Needles. Atmospheric pollen contamination throughout the state is much less than in the Central states, yet many Californians suffer with hay fever due to a variety of pollens. The usual experience of the Central states ragweed sufferers on removing to California is that they have complete freedom at least for two or three years.

One may find any sort of climate one wishes in a state with the varied topography of California. Minimum winter tem-

peratures for the coastal area, the Sacramento Valley and the San Joaquin Valley are from 5 to 10 degrees higher than for Seattle and Portland, from 35 to 45 F. In these areas frost is rare. Normal January temperatures in southern California are at least 25 degrees higher than in the correspondent's locality. Thus, assuming that a dry warm climate such as that of southern California is most favorable for neuritis and knowing that western Washington is ideal for ragweed hay fever, the choice between these two sections would seem to depend on the relative severity of the two afflictions in this particular case.

DICHORIONIC OR DOUBLE OVUM TWINS

To the Editor—Enclosed is a snapshot of a delivery I had on September 14. The larger fetus lived about thirty five minutes and there was vigorous crying during most of that time. The snapshot was taken about five minutes after the fetus ceased respiration. The mother is a quintipara all births having been normal. There were no unusual symptoms during this pregnancy which was of six and a half months duration until the last month when severe cramps began in the calves of the legs. These grew more severe and with them a numbness. Pains began suddenly and delivery of the smaller fetus which was very necrotic and of about three months' duration occurred within two hours the larger one was delivered in another hour. The placentas were expelled together the smaller one being necrotic. Both specimens have been preserved. Would you please let me know how usual or unusual these cases are?

H G HARRIS M D Wilmot S D

ANSWER—An occurrence similar to the one shown in the illustration is uncommon but by no means rare. Nearly always it occurs in the presence of dichorionic or double ovum twins. As in the present instance, one fetus dies early in pregnancy. For some unknown reason it is not expelled as usually occurs in the case in which

death occurs in a single fetus in the uterus. The live twin continues to grow but the dead one undergoes degenerative and maceration changes and if it remains in the uterus long enough it becomes mummified. If the dead fetus is expelled a few weeks or months after its death it appears as a macerated, shriveled up fetus and its placenta shows distinct evidence of degeneration. The dead fetus and the placenta are decidedly smaller than the fetus and placenta that continued to grow. The disparity in size between the two fetuses should not be interpreted as meaning that there were two conceptions with an interval of time between them. Had the larger baby continued to live to full term a still more unusual sight would have presented itself, namely a full term normal baby and placenta and in addition to this a tiny, dried up, flattened fetus known as a fetus papyraceus or fetus compressus.



Twins one of whom died early in pregnancy

DIABETIC COMA—HYPERINSULINISM

To the Editor—Is it possible for a patient known to have severe diabetes who has been under large doses of insulin to show signs of threatening coma (which responded to insulin treatment) with no acetone bodies in the urine and yet a four plus sugar and a very high blood sugar? Do signs of hyperinsulinism ever appear with blood sugars of 200 mg in patients who are being treated for impending coma they showing previously 350 mg? The treatment was rigid. Please omit name.

M D Rhode Island

ANSWER—The answers depend to some extent on what one considers to be the 'signs of threatening coma' and the 'signs of hyperinsulinism.'

There is no definite level of hyperglycemia or glycosuria at which acetonuria appears in all cases, nor is there any constancy as to the amount of acetonuria present in all cases of diabetic coma. As a matter of fact, these relationships may show a fair degree of constancy in a given individual at different times, but they are known to vary widely in different individuals. Thus the appearance of acetonuria may be particularly tardy in elderly diabetic patients. It is therefore possible for a patient with severe diabetes, such as the one in question, who has been receiving large doses of insulin, to show a four plus glycosuria and a very high blood sugar without acetonuria at the time the earliest signs of coma appear. Pre-

sumably acetonuria would have appeared eventually, had the administration of additional insulin been further delayed. However, in evaluating the supposed 'signs of threatening coma' it would be important to consider the direct effects of the infection or other influences which precipitated the loss in carbohydrate tolerance or 'insulin resistance.'

The "signs of hyperinsulinism" have been seen at a blood sugar level of 60 mg per hundred cubic centimeters and not in instances in which the blood sugar fell below 20 mg. However, the appearance of typical hyperinsulinism at 200 mg would be unusual to say the least. In elderly patients with diabetes and cardiovascular disease the rapid reduction of the blood sugar level, regardless of the absolute level at which this occurs, may result in stenocardial symptoms. This question is discussed by Soskin, Samuel Katz, L N, Strouse Solomon, and Rubinfeld, S H. Treatment of Elderly Diabetic Patients with Cardiovascular Disease, *Arch Int Med* 51 122 (Jan) 1933

HYPERSENSITIVITY TO TOBACCO

To the Editor—A man aged 28 complains of headache some tearing of the eyes a feeling of tightness or puffiness of the eyelids stiffness of the nose and a catch in the voice whenever he smells any cigaret or cigar smoke or if he tries to smoke a cigaret himself. He also complains of stiffness of the nose when in a hot moist atmosphere. Physical examination is entirely negative. One sister has had asthmatic attacks in the fall which have been controlled by ragweed injections. Is there any known method of desensitization to tobacco smoke? Please suggest treatment or give references to the literature. Please omit name

M D., New Jersey

ANSWER—The description of the case and the family history make it appear that this may be an instance of true (and perhaps atopic) hypersensitivity to tobacco. Sulzberger has shown that tobacco allergens (skin reaction-eliciting substances) are thermostable and coctostable and it is therefore highly probable that at least some of the allergens of the tobacco plant are also present in the smoke. There is no available experience on the results of desensitization to tobacco, but it might nevertheless be indicated to make the attempt in this case. The patient should first be skin tested by the application to a scratch of a saline extract prepared from the tobacco of his own cigarettes. The extract should be prepared and the skin tests made in the manner usually employed in pollen disease. If there is no definite whealing or erythema at the scratch site, a minute amount (0.02 cc) of the extract should be injected intracutaneously. (It is imperative to guard against shock with all the usual precautions, i. e., test on the forearm have a tourniquet handy and be ready with a solution of epinephrine as well as with a syringe for subcutaneous injection.) If the patient reacts with a wheal to the skin tests, hyposensitization injections, just as employed in hay fever, may be tried. They would seem to have some promise of success, as with the symptoms described and with positive skin tests it does not appear far fetched to consider the case analogous to hay fever or asthma. Further information on recent work in tobacco hypersensitivity will be found in Harkavy, Joseph Hebal, Selian, and Silbert Samuel *Proc Soc Exper Biol & Med* 30 104 (Oct) 1932, Sulzberger, M B *J Immunol* 24 85 (Jan) 1933, 24 425 (May) 1933 and particularly in the summary and discussion of Sulzberger, M B *Bull New York Acad Med* 9 294 (May) 1933

EFFECTS OF SALT WATER IN MORNING

To the Editor—Please advise me whether the habit of drinking a glass of salt water before breakfast is effective for chronic constipation and whether it could have a deleterious effect if used over a long period. Please omit my name and address.

M D Illinois

ANSWER—The drinking of two or three glasses of salty water before breakfast is sometimes a most satisfactory method of relieving constipation. We cannot see how it could possibly have a deleterious effect even if used throughout a lifetime. The principle appears to be that physiologic solution of sodium chloride at body temperature is not held back at the pylorus but runs right on down through the small bowel. Here again it appears to be neither absorbed nor diluted and hence it runs on into the colon where it serves to bring about an evacuation.

Because the pylorus holds back cold liquids the water should not be iced and it must be taken before the pylorus is somewhat closed by the presence of food in the stomach. In order to make physiologic solution of sodium chloride about a third of a teaspoonful of table salt should be added to each glass of water. Three or four glasses should be drunk before breakfast while the morning toilet is being made.

ANTITULARENSE SERUM

To the Editor—I have a patient who has had tularemia for three months. His temperature rises to as much as 102 F in the afternoon, and he complains of joint and muscle soreness and pains. The joints of his hands are definitely stiff and sore. There seem to be no complications other than this. I should like to know whether this is very unusual and whether there has been anything discovered which would be of use in the way of treatment. The primary lesion which resulted from a tick bite, has just about healed. Any information or suggestions would be appreciated.

WILKINS J OZLIN M D South Hill Va.

ANSWER—While the antitularenses serum developed by Foshay appears to be most useful early in the course of the disease, there is considerable evidence to indicate that the duration of symptoms and the period of disability may be shortened by the administration of the antiserum even after the disease has remained active for three months (Foshay, Lee. An Antiserum for the Treatment of Tularemia, *THE JOURNAL*, Nov 4, 1933, p 1447. Tularemia Treated by a New Specific Antiserum, *Am J M Sc* 187 235 [Feb] 1934. On the Treatment of Tularemia, *Ohio State Med J* 31 21-24 [Jan] 1935). The antiserum, together with the directions for its administration, may be obtained directly from Dr Lee Foshay, Cincinnati General Hospital, Cincinnati.

USE OF DIGITALIS

To the Editor—Please discuss the use of digitalis in heart failure in an orthopedic man aged 71 with heart beat below 60 and moderate edema. The only contraindication for its use is a heart beat (irregular) well below the patient's normal rate and when there is no digitalis in his system. Please read the answer to the question in *THE JOURNAL*, March 18 1933 page 840 'Treatment of Disturbance of Circulation in which digitalis is apparently not contraindicated by a heart rate of 30 to 35. Please omit name

M D Minnesota.

ANSWER—If, in a patient with obvious cardiac decomposition, the slowness of the pulse at the wrist is due to a heart rate-pulse deficit caused by auricular fibrillation, it is not only no contraindication to digitalis but the typical indication for digitalis therapy, and a liberal dosage of digitalis should be given. It is assumed that in such a case the digitalis acts by producing heart block setting the ventricle free from the dominance of the auricular contractions, and thus eliminates the weakest ventricular systoles, which do not reach the wrist, and strengthens the others, so that the pulse beat and ventricular beat tend to approximate each other. It is the absolute slowness of the heart beat due to heart block as in Stokes Adams disease, that is the typical contraindication to digitalis.

VENEREAL DISEASES

To the Editor—I have heard the statement made that there are six venereal diseases. Is this so? I can account for only five: syphilis, gonorrhea, yaws, lymphogranuloma inguinale and soft chancre (Ducrey infection). Are Vincent's infection or any of the leishmaniasis considered to be venereal? Any information you can give will be greatly appreciated.

EDWIN E ZIEGLER M D San Francisco

ANSWER—The designation of venereal diseases numerically is not desirable and the subject is one about which there is considerable controversy. The venereal diseases that are usually recognized in this country are five in number: syphilis, gonorrhea, chancroid, granuloma inguinale and lymphogranuloma inguinale. As a rule those who speak of a sixth venereal disease consider a Vincent infection to be a venereal disease and lymphogranuloma inguinale to be the sixth disease. Clinically the Vincent infection and granuloma inguinale appear to be identical, but most workers now feel that this entity is due to the so called Donovan's bodies and not to the Vincent organisms.

FOLLICULAR MANGE

To the Editor—Would you kindly give me the following information: Is so-called follicular mange in dogs caused by a single parasitic mite or are there a number of organisms responsible for the condition? Is this condition contagious to human beings and if it is how great are the chances of contagion? If human beings are susceptible to this parasitic infection how serious may this infection become? What is the prognosis? What is the treatment? What is the prognosis in dogs when the condition is only slightly to moderately advanced when no pustules are present and when it is manifested only by some degree of loss of hair? What is the treatment for the dog? If this is published kindly omit my name.

M D Connecticut.

ANSWER—Follicular mange in the dog is caused by a mite or acarid of the genus *Demodex folliculorum*. The dog acarid like acarids in other animals, is practically not pathogenic for man or at best only rarely and mildly so. It seems that these parasites as a rule do not thrive on the human skin.

Medical Examinations and Licensure

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Colorado July Report

Dr Harvey W Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, July 7, 1936. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Sixty one candidates were examined, 60 of whom passed and 1 failed. Ten physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine (1936)	82 82 83 84 85 86 86 86 85 87 87 87	(1935)	82
87 87 87 87, 88 88 88 88 88 88 88 88			
88 88 5 89 89, 89, 89 5 90 90 90 90 91 91			
92, 92 5			
Northwestern University Medical School (1936)			85
Harvard University Medical School (1935)			86
St Louis University School of Medicine (1936)			81
Creighton University School of Medicine (1935)	85	(1936)	87
University of Nebraska College of Medicine (1935)		(1935)	79
Cornell University Medical College (1935)		(1935)	85
University of Rochester School of Medicine (1934)		(1934)	84
University of Pennsylvania School of Medicine (1935)		(1935)	85
Marquette University School of Medicine (1935)		(1935)	83
Medizinische Fakultät der Universität Wien (1932)*		(1932)*	80
Albert Ludwigs Universität Medizinische Fakultät	Frei		
burg		(1912)*	78
Osteopath†	75 78 79 81 85 85		85
			69
School	TAILED	Year Grad	Per Cent

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine (1935)		(1935)	Arkansas
Loyola University School of Medicine (1934)		(1934)	Illinois
School of Medicine of the Division of the Biological Sciences (1934)	N B M Ex	(1934)	N B M Ex
State University of Iowa College of Medicine (1933)		(1933)	Iowa
University of Kansas School of Medicine (1935)		(1935)	Kansas
Harvard University Medical School (1933)	N B M Ex	(1933)	N B M Ex
Washington University School of Medicine (1935)		(1935)	Missouri
University of Nebraska College of Medicine (1934)		(1934)	Nebraska
New York University University and Bellevue Hospi tal Medical College (1928)		(1928)	New York

* Verification of graduation in process

† Examined in medicine and surgery

Washington June-July Report

Mr Dave S Cohn, secretary, Department of Licenses, reports the written examination held in Seattle, June 29-July 1, 1936. The examination covered 7 subjects and included 70 questions. Thirty-eight candidates were examined, all of whom passed. Twenty-two physicians were licensed by reciprocity and 8 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists (1936)	83 84 87*		
Stanford University School of Medicine (1936)		(1936)	81
University of Colorado School of Medicine (1935)		(1935)	87
George Washington University School of Medicine (1935)		(1935)	73
Northwestern University Medical School (1934)		(1934)	77
(1935) 78 86 (1936) 80 80 83			
Rush Medical College (1933)	77	(1935)	84
University of Illinois College of Medicine (1935)		(1935)	89
(1936) 88 88			
University of Kansas School of Medicine (1935)		(1935)	88
Harvard University Medical School (1931)	83	(1932)	86 89
University of Michigan Medical School (1925)	79	(1934)	87
Creighton University School of Medicine (1935)		(1935)	84
University of Nebraska College of Medicine (1935)	75*	81*	84
University of Rochester School of Medicine (1932)		(1932)	78
Ohio State University College of Medicine (1929)		(1929)	83*
University of Oregon Medical School (1933)		(1933)	87
(1934) 80 (1935) 79, 82 84			
University of Wisconsin Medical School (1933)	83	(1935)	76*
McGill University Faculty of Medicine (1935)		(1935)	83*

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Stanford University School of Medicine (1934)	2	(1934)	California
University of Colorado School of Medicine (1933)		(1933)	Colorado
Illinois Medical College Chicago (1903)		(1903)	Montana
State University of Iowa College of Medicine (1931)		(1931)	Iowa
Louisiana State University Medical Center (1936)		(1936)	Louisiana
Tulane University of Louisiana School of Medicine (1929)		(1929)	Louisiana
Johas Hopkins University School of Medicine (1904)		(1904)	Tennessee
University of Minnesota Medical School (1931)		(1931)	Minnesota
St Louis University School of Medicine (1934)		(1934)	Missouri
Creighton University School of Medicine (1935)	2	(1935)	Nebraska
University of Nebraska College of Medicine (1935)		(1935)	Nebraska
Duke University School of Medicine (1933)		(1933)	Maryland
University of Oklahoma School of Medicine (1935)		(1935)	Oklahoma
University of Oregon Medical School (1932)		(1932)	Wisconsin
(1931) (1934) (1935) Oregon			
University of Pennsylvania School of Medicine (1909)		(1909)	Virginia
University of Virginia Department of Medicine (1935)		(1935)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists (1936)	6	(1936)	N B M Ex
University of Oregon Medical School (1934)	2	(1934)	N B M Ex

* License has not been issued.

Book Notices

The Oxford Medicine By Various Authors Edited by Henry A Christian A. M. M. D. LL. D. Hersey Professor of the Theory and Practice of Physic Harvard University Volume VII Psychiatry for Practitioners Cloth Price \$10 Pp 634 New York Oxford University Press 1936

This volume, with eleven contributors, is in loose leaf form. The subjects included are the recognition and the management of the beginning of mental disease, by Edward A Strecker and Harold D Palmer, the psychiatry of childhood, by Gerald Pearson, postencephalitic and posttraumatic behavior disorders, by Earl D Bond, mental deficiency, by E Arthur Whitney, the psychopathic personalities, by Eugen Kahn, the toxic reaction types, by Franklin G Ebaugh, paranoia and paranoid conditions, by William A White, the dementia praecox (schizophrenia) group by Clarence O Cheney, the affective reaction type (manic-depressive), including involuntional melancholia, by D K Henderson and psychoneuroses, by T A Ross. Each of these writers does well the task assigned to him. All are known for their contributions in this field, and those familiar with the field will know what to expect. The articles are written to appeal primarily to the general practitioner and the student rather than to the specialist. They are illustrated with interesting case reports presented in a succinct manner and for that reason appeal particularly to the general reader. Some of the essays for example that on postencephalitic and posttraumatic behavior disorders, are hardly greater in scope than the contributions one finds readily in current periodicals. Others, however, such as the work of Ebaugh and that of Strecker are monographic. The weakness of a book of this type is the multiple consideration which it brings of certain conditions, which however are taken up from varying points of view. A consultation of the index which is none too complete, makes this multiple reference apparent. Each of the essays is accompanied by a well chosen bibliography.

Reports on Biological Standards IV The Standardization and Estimation of Vitamin A Edited by E Margaret Hume and Harriette Chick Medical Research Council Special Report Series No 202 Paper Price 1s Pp 81 London His Majesty's Stationery Office 1935

The two most widely promoted vitamins are vitamin A and vitamin D. No satisfactory methods of physical or chemical assay have been devised for them. Animal assays of course are used and are satisfactory for most clinical practice, but they are costly, require a large expenditure of time, and their accuracy does not nearly approach that for ordinary analysis. Therefore attempts to standardize preparations by other than bio-assays are always welcome. In this direction the Medical Research Council of Great Britain has been fostering a series of reports on products now biologically standardized. The two hundred and second report of this council deals with the standardization and estimation of vitamin A.

After the introduction there is an excellent chapter dealing with carotene as the international standard of vitamin A. This alone is a complex subject in view of the fact that carotene exists in three isomeric forms—alpha beta and gamma—and besides that, there are a number of related substances. Notwithstanding carotene has found a place in determining vitamin A activity. In the United States the Pharmacopeial Commission has deviated from this procedure in that it supplies reference standard cod liver oil for use in both vitamin A and vitamin D assays. At present analytical chemistry is undergoing a slow period of renaissance, during which time the examination of products in very small quantities is becoming greatly improved. This is due to the development of the microchemical balance with its remarkable sensitivity and developments which have grown from the use of this balance also in large part to the spectrograph. It appears hopeful that vitamin A may soon be standardized in materials by the use of the spectrograph without the use of biologic assays even for a basis of primary standardization. The purpose of much of the work at the present time is to standardize a method of preparation of the samples. The physical measurement is already in wide use in determining the comparative vitamin A activity of lots of essentially the same material. It is also reported that the degree of concordance was fairly satisfactory when the results of spectrographic examination were compared with the biologic tests. Fortunately for this country and for many of the European countries standards of an international char-

acter are now being used for the estimation of vitamin products. Therefore reports such as 'The Standardization and Estimation of Vitamin A' issued by the Medical Research Council with comprehensive discussions of well conducted studies are much to be desired by those who are interested in the subject of accurate measurement and dosage of the vitamins.

A Handbook of Urology for Students and Practitioners. By Vernon Pennell M.A. M.B. B.Chir. Hon Surgeon and Surgeon with charge of Urological Department Addenbrooke's Hospital Cambridge. Cloth Price \$2.75 Pp 224 with 34 illustrations London Cambridge University Press New York Macmillan Company 1936

The author presents this book as a handbook for the student and practitioner, and this end is admirably filled by a book having no pretense to being a complete treatise yet presenting its subject matter in concise and systematic style, giving a clear view of an essentially practical urology. The subject is treated in logical sequence with a convenient tabulation of essential and forceful headings. The few illustrations are well selected to give with the text a clear understanding of the subject. Rare diseases, obsolete treatment and controversial matter are omitted of necessity in a book of this size. The earlier chapters on investigation display the order of well organized practice and constitute a model on which the student might profitably base his examination of the urologic case. Thereafter the subject is presented on an anatomic basis with the exception of genito-urinary tuberculosis, which fittingly is considered as a whole in a single and separate chapter. The peculiar problems arising in the nursing of the urologic patient are considered and a useful appendix tabulating drugs urinary antiseptics and so on, closes the book. The author makes apology for possible dogmatism yet his presentation is in accord with the most widely accepted of modern teaching, so that his text only gains in clarity. This book is as remarkable for the wealth of information presented as for its readability. Mr Pennell has given to urologic literature what Bailey and Love have given to surgery, concise exposition of essentials in practice. Having regard to the limitations of so small a volume, the urologic student must find this book an excellent supplement to the larger works. Though unsatisfying perhaps to the specialist, the work will be welcomed by the student and the intern.

Tendances de la médecine contemporaine La médecine à la croisée des chemins Par P Delore médecin des hôpitaux de Lyon Paper Price 27 francs Pp 218 Paris Masson & Cie 1936

This book is devoted to a philosophic and critical discussion in general terms of tendencies in medicine, current and developing. As indicated by the title, medicine is believed to be at the crossroads a phrase first used by Cushing. In spite of its great achievements contemporary medicine now suffers according to Delore, from certain unfavorable tendencies such as lack of genuine clinical spirit, early and excessive specialization undue reliance on laboratory tests, failure to consider the patient in relation to his surroundings, and the useless overproduction of medical publications. In the further evolution of medicine however the author recognizes certain favorable trends, e.g. increased emphasis on physiology and psychology, on constitution and heredity, on the relation of disease to social environment, on a more broad and synthetic conception of disease on efforts to detect disease in its earliest and preclinical stages and on the prevention of disease. The style is clear and lively.

The Eye and Its Diseases By 82 International Authorities Edited by Conrad Berens M.D. Ophthalmic Surgeon Pathologist and Director of Research New York Eye and Ear Infirmary Cloth Price \$12 Pp 1,234 with 436 illustrations Philadelphia & London W B Saunders Company 1936

In this volume competent ophthalmologists throughout the world cooperate to present a complete textbook. Eighty two authorities are included. The book follows the classic procedure in medicine of beginning with history and proceeding to anatomy and physiology examination, refraction disease medical ophthalmology, injuries treatment and prophylaxis. There are also chapters on the legal aspects of ophthalmology immunology and laboratory diagnosis. The historical introduction by Shastid is essentially a series of brief biographies of noted discoverers. The sections on anatomy and physiology are excellently illustrated and the section on routine examination is practical. It becomes apparent through this section how

greatly the knowledge of ophthalmology has benefited from the discovery of new types of apparatus. The book is quite up to date and, while concise, at the same time sufficiently complete to be in miniature an encyclopedia of ophthalmology. Especially to be commended are the numerous excellently reproduced illustrations and the extraordinarily complete index. It is interesting to observe that trachoma is still a disease of doubtful etiology, with the author inclined to the belief that trachoma began as an infection of the genital tract transferred to the eye and modified by many generations of passage. The student has now available several textbooks of ophthalmology under a single authorship and the present symposium type of volume. There are certain factors of advantage and disadvantage associated with each type. Certainly however, the Berens book does much to minimize the disadvantages of the symposium type and to develop by its single editorship many of the advantages of the volume produced by a single author.

Einführung in die Physiologie des Menschen Von Professor Dr. Hermann Rein, Direktor des Physiologischen Instituts der Universität Göttingen. Paper Price 18 marks. Pp 404 with 366 illustrations. Berlin Julius Springer 1936.

As a distinguished student of Max von Frey, Professor Rein was asked to reedit the former's textbook in physiology. In his foreword Rein points out that von Frey's book was such a product of his personality that it would be impossible for one to do justice to a revision. He therefore chose to prepare a new book. In so doing he has put together a great deal of the new matter in the physiologic literature alongside of much that is classic, in such a way as to provide a useful source of material for the serious student of physiology. There is a liberal amount of factual material in the book so that the student is provided with a great deal of meat to work with. The physical rather than the chemical aspects of physiology have been stressed. Particularly in relation to muscle physiology this appears to constitute a defect. The traditional treatment of muscle physiology from the mechanical point of view deprives the subject of its importance and significance. In connection with the physiology of the kidney, the chemistry is largely of a qualitative sort, and there is no adequate discussion of such important problems as renal clearance. In general the chemical features of the book are all elementary and remain, for the most part, at the descriptive stage. A conspicuous exception is in the chemistry of the blood which is amply discussed. The discussion of the vitamins is quite inadequate for a modern textbook. However, the excellent treatment of the physical side of physiology warrants high praise and makes the book valuable to a certain group of readers.

The Gift of Columbus By Charles C. Dennie, M.D. Cloth. Price \$2. Pp 193. Kansas City, Missouri: Brown White Company 1936.

When syphilis appeared in Spain during the latter part of the fifteenth century many Spanish physicians commented on its ravages. Among the most interesting of the writings were those of Francisco Lopez de Villalobos, whose contributions stimulated Dr. Dennie's volume. The book begins with a discussion of the origin and history of syphilis and a brief sketch of the life of Villalobos and of the evidence for and against the American origin of syphilis. There follows a consideration of the various manifestations of the disease all presented in popular form, with a concluding chapter entitled "Syphilis Can Be Conquered," explaining the modern methods of treatment. The final chapter preaches the value of prophylaxis. While the volume cannot be considered a significant contribution in the debate as to the origin of syphilis, it should be read with interest by all who are anxious to inform themselves concerning the nature of the disease.

Kurze Übersichtstabelle zur Geschichte der Medizin Von L. Aschoff und P. Diergen. Third edition. Paper. Price 4.80 marks. Pp 81. Munich: J. F. Bergmann 1936.

This is the third revised and enlarged edition of the famous Aschoff tables of the history of medicine. They make available in brief form the dates and the records of medical discovery. It is interesting to observe that the leading contributions of the current decades are considered by the author to be the development of insulin, the Aschoff-Zondek test, the anti-allergic rooms, new anesthetics such as ethylene, acetylene and tribrom-ethanol, the use of activated ergosterol for rickets, and the new operations on the sympathetic nervous system. To

these the author would add some new political effects on medicine including the point of view of the Nazi government in Germany.

Heart Disease and Tuberculosis: Efforts Including Methods of Diaphragmatic and Costal Respiration to Lessen Their Prevalence By S. Adolphus Knopf, M.D. Cloth. Price, \$1.25. Pp 108 with 56 illustrations. Livingston, Columbia County, New York: Livingston Press 1936.

There is nothing in this booklet to recommend it unless it is the illustrated breathing exercises to increase the girth of the chest. It is rambling and unscientific, with recourse to selected quotations from "authorities." It is an example of the type of writing which, fortunately, is getting rare in medicine.

American Martyrs to Science Through the Roentgen Rays. With a Short Glossary of the Scientific Terms Used in the Text By Percy Brown, M.D., F.R.C.P., F.A.C.R., Historian. American Roentgen Ray Society. Cloth. Price \$3.50. Pp 276 with 55 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas 1936.

When the roentgen rays were first contributed to medical science, early workers failed to realize their menace to the unprotected worker, hence the passing of the years has seen the mutilation and death of many of those who conducted the earliest experiments. They were all martyrs to the advancement of medical science. Dr. Percy Brown gives brief biographies of twenty-eight of these martyrs, indicating as well their scientific contributions to the field they helped to advance. Today there are still among us many roentgenologists who will also in the coming years die as a result of their efforts in this field. Some day, no doubt, medical literature will make available a long list of these physicians who throughout the world have given their careers and their lives to the advancement of roentgenology. Even this brief collection is an inspiration.

Röntgendiagnostik der Knochen und Gelenkrankheiten. Heft 4 (Abteilung Gelenkrankheiten). Degenerative Wirbelsäulenerkrankungen Von Professor Dr. Robert Klenböck. Paper. Price 24 marks. Pp 228 with 215 illustrations. Berlin & Vienna: Urban & Schwarzenberg 1936.

This paper covered monograph is one of the most creditable pieces of work that has come from any radiologist. The author discusses degenerative diseases of the vertebrae, adolescent kyphosis or Scheuermann's lesion, vertebral epiphysitis, spondylitis, lumbosacral disease and its relation to sciatica and arthritis deformans, and hemangioma of the vertebrae. The reproductions of the roentgenograms are excellent.

Disability Evaluation: Principles of Treatment of Compensable Injuries By Earl D. McBride, B.S., M.D., F.A.C.S., Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine. Cloth. Price \$8. Pp 623 with 374 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company 1936.

The author presents a book that should be of great value to every one interested in industrial lesions since it appraises the extent of functional loss from the economic standpoint. The writer has formulated a uniform system of arriving at percentage of disability. He discusses the workman's compensation laws, standardizing disability, examination of the disabled and ankylosis of every joint, disabilities resulting from fractures throughout the body, nerve injuries, head injuries and injuries of the eye and ear, burns and hernia. The line drawings are easily understood and instructive.

Medicine in the Bible. The Pentateuch Torah By Charles J. Brim, M.D., Department of Medicine, Beth Israel Hospital, New York. With an introduction by Victor Robinson, M.D., Professor of History of Medicine, Temple University School of Medicine, Philadelphia. Cloth. Price \$5. Pp 384 with 18 illustrations. New York: Froben Press 1936.

This volume is more correctly a reflection of the medical references in the Old Testament. The author has carefully culled these references and has added to them definitions, excellent notes and Talmudic references. His work appears to be authentic and contains much of interest not only for the scholar but for the general reader. There are a few attractive illustrations and a useful index.

The Hygiene of the Change in Women (The Climacteric) By Isabel Emille Hutton, M.D. Cloth. Price 6s. Pp 110. London: William Heinemann Ltd 1936.

This is a sound book of advice for women at the climacteric. It discusses not only the usual symptoms and hygiene of this period but also the diet in relationship to weight, and particularly the art of living. A useful chapter is one of advice to husbands.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Accident Insurance Excessive Application of Heat by Patient as "Medical Treatment"—The defendant insurance company issued a policy to the plaintiff providing stated benefits for "loss resulting directly and independently of all other causes from bodily injuries effected solely from accidental means." Benefits, however, were not to be paid for loss "caused directly or indirectly, wholly or partly, by bacterial infections (except pyogenic infections which occur simultaneously with and through an accidental cut or wound) or by medical or surgical treatment, except such as may result directly from surgical operations made necessary solely by injuries covered by this policy."

A chiropodist in undertaking to remove a callus from the insured's foot pared and cut it too deeply. The callus became infected, an ulcer formed and the insured went to a physician, who lanced it. In accordance with the physician's directions the patient applied heat to the infected place, using, apparently without the physician's knowledge, a device made by a local electrician. The foot was badly burned and it was necessary subsequently to amputate the leg. He brought suit on the policy and from a judgment in favor of the insurance company, rendered by the district court of the United States for the eastern district of Louisiana he appealed to the circuit court of appeals, fifth circuit.

Medical and surgical treatment" said the circuit court of appeals mean what is done by a physician of any recognized type in diagnosing a bodily ailment and seeking to alleviate or cure it, including the things done by the patient to carry out the specific directions of the physician. We may assume without deciding that a chiropodist's treatment is not medical or surgical treatment within the meaning of the policy and that the chiropodist in paring and cutting the callus too deeply performed some unintended act or slip rather than an expected consequence of an intentional act consented to by the plaintiff. Thus assuming there would be an accidental wound, the pyogenic infection following which is not excluded from the coverage of the policy. But this wound did not result "directly and independently of all other causes" in the amputation which was subsequently necessary. Its direct result was to send the plaintiff to his physician to seek medical treatment. The treatment consisted first in lancing the ulcer hardly to be called a surgical operation. Then the physician prescribed as further treatment the use of heat on the foot. It is not alleged that any accident occurred in the use of the heat. The electrical apparatus used for that end was deliberately chosen by the insured. The burn was occasioned by no sudden or extraordinary occurrence and was not the result of any accidental means, but of the means deliberately used. If an accident at all, it was an accident caused directly or indirectly by medical treatment prescribed by the physician. The burn was not the direct or natural consequence either of the ulcer or of the lancing of it, but of the use of heat as a curative agent. Since the policy did not insure against an accident or an injury which is the direct or indirect result of medical treatment, the court held that the insured had no valid claim under the policy and affirmed the judgment in favor of the insurer.—*Barkerding v Aetna Life Ins Co* 82 F (2d) 358

Accident Insurance Peritonitis as an "Infection."—Gregory fell from a locomotive suffering an injury to his stomach. Peritonitis developed and nineteen days later he died. His widow brought suit on an insurance policy which provided stated benefits if the insured should through external violent and accidental means receive bodily injuries which shall, independently of all other causes result within six months in death. Benefits however were not to be paid if death resulted from any poison or infection unless the infection is introduced into or by and through an open wound visible to the naked eye. From a judgment in favor of the beneficiary entered on a finding of the jury that Gregory's death was the result of the injury stated indepen-

dently of all other causes, the insurer appealed to the court of civil appeals of Texas, Eastland.

The insurer contended that it was not liable because the evidence showed conclusively that Gregory's death was caused by infection and that that infection was not introduced into his body through any open wound visible to the naked eye. While much of the evidence, said the court of civil appeals, is in dispute, we deem it sufficient to authorize the conclusion that about nineteen days before Gregory's death he fell from a locomotive engine and suffered an injury to his stomach which caused his death. Apparently his injury did not produce any open wound visible to the eye but, according to medical evidence adduced by the beneficiary, the sole and only cause of his death was the blow received on his abdomen, which was sufficient to bruise the tissues and cause peritonitis. The policy, continued the court, provided for compensation for external accidental injuries which, independently of all other causes, result within six months in death. It is difficult to imagine a death six months after such an injury in which infection or disease had not set up as a result of the injury and finally produced death. The provision of the policy that exempted the insurer from liability from a death resulting from infection unless that infection is introduced through an open wound, in the court's opinion, was not intended to provide only for compensation for death resulting immediately from a violent external injury (before disease or infection had time to develop) nor was it meant to exclude death resulting within the period from disease or infection produced solely by such injury. To support such a conclusion the court relied on the familiar rule of law that the ordinary meaning of words and terms as they are commonly understood by the average layman is to be adopted in preference to a technical meaning as understood by members of a profession or by a lexicographer. The ordinary conception of the word "infection" the court concluded, to a layman implies the invasion of bacteria from the air into an opening or abrasion on the surface of the skin or body, causing "toxic or blood poisoning." That being so, this exemption was not intended to operate or apply to the facts in the present case where infection or disease is caused to operate internally as the result of an external injury, even though it may be conceded that peritonitis in its technical or medical sense may be an infection.

In any event, the court concluded, the insurer was liable for the benefits because Gregory's death was the result of the accident and was not the result of the infection, the infection being merely a link in the chain of causation a result of the injury and the medium through which the injury acted in producing death. Without injury to Gregory's stomach caused by his fall, there would have been no peritonitis and no death.

The judgment in favor of the beneficiary was accordingly affirmed.—*Order of Railway Conductors of America v Gregory (Texas)* 91 S W (2d) 1139

Society Proceedings

COMING MEETINGS

- American Society of Tropical Medicine Baltimore November 18 20
- Dr N Paul Hudson Department of Bacteriology Ohio State University Columbus Ohio Secretary
- National Society for the Prevention of Blindness Columbus Ohio Dec 35
- Mr Lewis H Carris 50 West 50th St New York Managing Director
- Pacific Coast Society of Obstetrics and Gynecology Seattle Nov 11 14
- Dr T Floyd Bell 400 29th St Oakland Calif Secretary
- Radiological Society of North America Cincinnati Nov 30 Dec 4
- Dr Donald S Childs 607 Medical Arts Building Syracuse N Y Secretary
- Society for the Study of Asthma and Allied Conditions New York Dec 5
- Dr W C Spain 116 East 53d St New York Secretary
- Society of American Bacteriologists Indianapolis Dec 28 30
- Dr I L Baldwin College of Agriculture University of Wisconsin Madison Wis Secretary
- Southern Medical Association Baltimore November 17 20
- Mr C I Loran Empire Building Birmingham Ala Secretary
- Southern Surgical Association Edgewater Park Miss Dec 15 17
- Dr E Alton Ochsner 1430 Tulane Ave New Orleans Secretary
- Southwestern Medical Association El Paso Texas Nov 19 21
- Dr Orville E Egbert 116 Mills Street El Paso Secretary
- Texas Ophthalmological and Oto-Laryngological Society Fort Worth Dec 4 5
- Dr Kelly Cox, 1719 Pacific Ave Dallas Secretary
- Western Surgical Association Kansas City Mo Dec 11 12
- Dr A H Montgomery 122 S Michigan Blvd Chicago Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 17 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

102 301-444 (Sept.) 1936

- Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinuria L. P. Hamburger and A. Bernstein Baltimore—p. 301
 *Comparative Study of Cytoplasmic and Nuclear Changes in Neutrophils in Severe Infectious States T. H. Mendell, D. R. Meranze and T. Meranze Philadelphia—p. 316
 Chronic Constrictive Pericarditis Electrocardiographic and Clinical Studies E. H. Cushing and H. S. Field Cleveland—p. 327
 Complete Atrioventricular Dissociation Clinical Study of Seventy-Two Cases with Note on Curious Form of Auricular Arrhythmia Frequently Observed A. Graybiel and P. D. White Boston—p. 334
 Observations on Some of Physiologic Effects of Correction of Faulty Posture L. B. Laplace and J. T. Nicholson Philadelphia—p. 345
 *Intra-Abdominal Torsion of Appendices Epiploicae Report of Two Cases and Review of Literature F. A. Fiske Philadelphia—p. 354
 Cerebral Lesions in Uncomplicated Fatal Diabetic Acidosis E. S. Dillon, H. E. Riggs and W. W. Dyer Philadelphia—p. 360
 Carotenemia and Diabetes Mellitus with Necropsy Report and Analyses of Liver for Carotene, Vitamin A, Total Fat and Cholesterol Case A. C. Parente, Clara H. Present and Elaine P. Ralli New York—p. 365
 Arteriosclerosis in Young Diabetics Method for Its Recognition by Arterial Elasticity Measurements P. Hallock Minneapolis—p. 371
 Metabolism of Levulose VIII Influence on Tolerance of Certain Nondietary Disorders A. W. Rowe, Mary A. McManus, Gertrude A. Riley and A. J. Plummer Boston—p. 377
 Urticaria from Cold Sensitivity and of Effect of Histamine Treatment Studies on Two Cases L. L. Saylor and I. S. Wright New York—p. 383
 Essential Hypertension II Constitutional Considerations M. Backer Bridgeport Conn.—p. 395

Changes in Neutrophils in Severe Infectious States—Mendell and the Meranzes studied sixty cases of severe infections (septicemia, bacteremia, pneumonia, peritonitis, osteomyelitis and severe mastoiditis), diseases which they have found to be associated with both nuclear and cytoplasmic changes. Since it is generally appreciated that single hemograms are of but limited interpretative value, they made frequent examinations (total white counts, differentials, Schilling and degenerative indexes) during the course of each illness, with repeated comparisons with the clinical state. From these studies they attempted to determine the value of each procedure independently and any advantage that one procedure might have over the other. From these investigations and their experience, they have looked on nonfilament counts of from 8 to 16 as normal, from 17 to 30 as a moderate shift to the left indicative of advancing infection, from 31 to 40 as a marked shift to the left and seen in severe infections, and 41 or more as an extreme shift to the left seen in grave states. In twenty of the sixty cases studied both the degenerative index and the Schilling index proved to be of equal value. Of the remaining forty cases in thirty-six the degenerative index was superior to the Schilling index. In only four of these forty cases was the Schilling index superior to the degenerative index. This series showed that at the height of the illness the degenerative index more accurately reflected the existing clinical state and the subsequent course. Degenerative cytoplasmic changes appeared earlier and persisted longer than did the corresponding nuclear changes during the critical stages of the illnesses studied. It is important to note how valuable both tests proved to be, and that, though the degenerative index proved to be superior in the majority of cases, the Schilling index again showed itself to be a very valuable procedure. It is evident that no hemogram in severe infection is complete without determination of the degenerative index.

Intra-Abdominal Torsion of Appendices Epiploicae—To the forty-two cases of intra-abdominal torsion or infarction of the appendices epiploicae reported in the literature, Fiske

adds two. A correct preoperative diagnosis was not made in any of the cases reviewed. The diagnosis of appendicitis in some form was the most frequent error. Among the preoperative diagnoses made were torsion of ovarian cyst, diverticulitis, tumor of the sigmoid, tubo-ovarian disease, cholelithiasis, degenerated myomas, intestinal obstruction and paralysis and peritonitis. Intra-abdominal torsion and hemorrhagic infarction of the appendices epiploicae are definite clinical entities. The most characteristic clinical symptom was abdominal pain, usually occurring over the site of the lesion. There may be associated localized tenderness. Nausea and vomiting were uncommon. A palpable tumor was present in seven cases. Intra-abdominal disease of the appendices epiploicae resulted in complications causing death in three cases. Preoperative diagnosis is difficult. In any obscure case of abdominal pain that is not explained by operative observation an exploration of the appendices epiploicae should be considered.

Studies on Urticaria from Cold Sensitivity and Effect of Histamine Treatment—Saylor and Wright discuss two cases of cold sensitivity, in one of which there was an unusually high temperature at which the reaction occurs. The blood pressure, pulse, skin temperature and gastric acidity responses of the patient to the cold urticaria are very similar to those resulting when histamine is administered. Therefore they deduce, in agreement with other authors, that these phenomena are due to an H, histamine-like, substance liberated from the tissue cells when they are exposed to certain degrees of cold. This substance is then taken up by the blood from the edematous wheal thus formed, which results in the production of the physiologic responses that simulate those of histamine. Since the temperature of the skin of their patient at which the reaction occurred was 80.2 F, the threshold was raised 60.2 F, an increase as compared with Bray's patient. There was no evidence of allergy in the skin tests, in eosinophil counts, in the passive transfer of serum test (Prausnitz-Küstner reaction) or in a family and personal history. It is not clear, at present, why histamine relieved the patient. The other patient first developed symptoms and became unconscious when swimming in cold water. This patient would probably have drowned had she not been rescued. It would seem, therefore, that wider dissemination of information regarding this syndrome should be undertaken. There are undoubtedly many unrecognized cases of this condition, and the dangers to these individuals of swimming, tub-bathing or taking showers in cold water cannot be overemphasized. It is entirely possible that the reaction might be of such severity as to produce a depression of blood pressure that would be incompatible with life.

American Journal of Physiology, Baltimore

117 1188 (Sept.) 1936 Partial Index

- Role of Thyroid in Calorigenic Action of Vitamin D H. Deutsch, C. I. Reed and H. C. Struck Chicago—p. 1
 Effect of Experimental Hyperthyroidism on Carbohydrate Metabolism I. A. Mirsky and R. H. Broth Kahn Cincinnati—p. 6
 Study of Blood Sugar of Adrenalectomized Dog W. M. Parkins, H. W. Hays and W. W. Swingle Princeton N. J.—p. 13
 Study of Average Temperature of Tissues of Exchanges of Heat and Vasomotor Responses in Man by Means of Bath Calorimeter A. C. Burton and H. C. Bazett Philadelphia—p. 36
 Augmentation of Gonad Stimulating Action of Pituitary Extracts by Inorganic Substances Particularly Copper Salts H. L. Fawcett, F. L. Hisaw and R. Greep Boston—p. 68
 Role of Duodenal Secretions in Prevention of Experimental Jejunal Ulcer C. M. Wilhelm, F. T. O'Brien, H. H. McCarthy and F. C. Hill Omaha—p. 79
 Endometrial Vascular Bed in Relation to Rhythmic Uterine Motility with Consideration of Functions of Intermittent Contractions of Estrus J. Fagin and S. R. M. Reynolds Brooklyn—p. 86
 Effect of Certain Sulfur Compounds on Coagulation of Blood J. H. Sterner and Grace Medes Philadelphia—p. 92
 In Vitro Action of Crystalline Vitamin B₁₂ on Pyruvic Acid Metabolism in Tissues from Polyneuritic Chicks W. C. Sherman and C. A. Elvehjem Madison Wis.—p. 142
 Relation of Pancreatic Juice to Pancreatic Diabetes II P. Harms, J. Van Prohaska and L. R. Dragstedt Chicago—p. 160
 Relation of Pancreatic Juice to Fatty Infiltration and Degeneration of Liver in Pancreatized Dog J. Van Prohaska, L. R. Dragstedt and H. P. Harms Chicago—p. 166
 Observations on Substance in Pancreas (Fat Metabolizing Hormone) Which Permits Survival and Prevents Liver Changes in Pancreatized Dogs L. R. Dragstedt, J. Van Prohaska and H. P. Harms Chicago—p. 175
 Histone Combinations of Protein Hormones F. Bischoff Santa Barbara Calif.—p. 182

Archives of Neurology and Psychiatry, Chicago

36 449 674 (Sept.) 1936

- *Epilepsy and Surgical Therapy W Penfield Montreal—p 449
 Paraphysal Cysts A J McLean Portland Ore—p 485
 Multiple Telangiectases of the Brain Discussion of Hereditary Factors in Their Development J C Michael Minneapolis and P M Levin Baltimore—p 514
 Pyramidal Tracts Experimental Study of Corticospinal and Other Components in Rabbit R J Swank Chicago—p 530
 Glioblastoma Point of View Concerning Treatment K G McKenzie Toronto—p 542
 Primary Degeneration of Corpus Callosum (Marchiafava's Disease) L S King and Marjorie C Meehan Boston—p 547
 Vascular Changes in Lateral Geniculate Body Following Extirpation of Visual Cortex Y C Tsang Chicago—p 569
 Cerebral Frontal Agenesis in Association with Epilepsy J F Bateman Cincinnati—p 578
 *Oscillopsia New Symptom Commonly Occurring in Multiple Sclerosis R M Brickner New York—p 586
 Calcium Content of Blood Serum During an Epileptic Convulsion M Scott and A W Pigott Skillman N I—p 590

Surgical Therapy in Epilepsy—Penfield declares that surgical therapy in epilepsy demands the most exhaustive preliminary study of the anatomy involved. No surgical procedure should be countenanced unless it is directed by rational analysis of the individual etiologic problem. Cervicothoracic sympathectomy has failed, except perhaps in the occasional case in which the condition is associated with obvious abnormality of the sympathetic nervous system. Removal of the carotid body and denervation of the carotid sinus are as yet without theoretical justification except in the rare case of demonstrably abnormal carotid sinus reflex. Nevertheless the practical results secured by Lauwers demand further consideration. Subtemporal decompression should be carried out only occasionally as an incident to craniotomy undertaken for other purposes or in the rare instances of chronic collection of fluid in the subdural space in which case the procedure may result in cure. Spinal insufflation of air or oxygen has been found effective only for patients less than 16 years of age whose seizures have occurred for four years or less. Epileptiform seizures secondary to lesions of the brain (tumor or cicatrix in the adult) call for surgical therapy. Operative excision of such cicatrices and of areas of focal atrophy gives an even better result from the point of view of cessation of attacks than does radical extirpation of the more benign types of tumor. After radical excision of meningocerebral cicatrix (twenty-two cases) 46 per cent of the patients have remained attack free and 32 per cent are markedly improved. After radical excision of areas of focal atrophy and focal cerebral cicatrix (twenty-two cases) 41 per cent of the patients are attack free and 32 per cent are improved. For epileptiform seizures exclusive of those with which neoplasm, abscess or hemorrhage of the brain were associated there have been in all seventy-five major craniotomies during a period of six years, with two operative deaths. In spite of the fact that these seventy-five operations include the negative explorations 32 per cent of the total number of patients are free from attacks and 23 per cent are definitely improved. For discriminating radical operation a wide osteoplastic exposure should be made so that the exploration may be ample. To open a subarachnoid collection of fluid is to do nothing of therapeutic value. When removal is undertaken the line of excision should be made through normal surrounding brain no matter what type the cicatrix may be. The removal must leave no damaged tissue behind and when easily possible should enter the ventricle. Such an excision leaves a fluid-filled space with little or no scarring. This excision should be preceded by painstaking electrical exploration of the cortex under local anesthesia and should be carried out only when the evidence indicates that the location or the area in question corresponds with the pattern of convulsive seizure from which the patient suffers. Spontaneous arrest of habitual seizures is not an unknown phenomenon in essential epilepsy but never occurs when there is a definite objective lesion of the brain. Epilepsy can never be certified as cured. Former sufferers must always be considered potentially epileptic and an illness with high fever may bring on a seizure in such a person years after the apparent cessation of the malady. Therefore the cures listed cannot be considered final but the result is none the less gratifying to the patient.

New Symptom in Multiple Sclerosis—Brickner discusses an apparently heretofore undescribed symptom that was observed in a recent study of sixty-two cases of multiple sclerosis. The name oscillopsia (oscillating vision) is suggested for it. The patient complains that objects seem to move back and forth to jerk or to wiggle. The oscillation usually occurs only during walking, although occasionally it also manifests itself during fixation of gaze at rest. Most common, it applies to near and distant objects equally. The motion may be in any direction, although the lateral component is usually the most prominent. The oscillation under consideration is an oscillatory sensation associated specifically with certain phenomena of walking and fixation of gaze. Nystagmus is the most common mechanism; intention tremor of the head is rather frequent and occasionally oscillopsia depends on tremors. Sometimes two or more factors are combined. In no instance has the symptom been observed unless at least one of these phenomena was present. The symptom occurred in eight of the sixty-two cases (12.9 per cent) and as diplopia without actual oscillopsia in another. Data relevant to the matter were lacking in some of the earlier cases, in which the symptom was not sought, so the incidence may have been even higher. The symptom has been seen five times in another group of patients (one of whom did not present typical multiple sclerosis). In eight of the thirteen cases in which the symptom has been seen it developed within the first two years. In one (in which it was associated only with tremors) it was a first symptom.

Archives of Surgery, Chicago

33 349 544 (Sept.) 1936

- Congenital Defects of Femur Fibula and Tibia E Freund Venice Fla—p 349
 *Arrhenoblastoma of Ovary Testicular Adenoma Tubulare M Behrend and S Levine Philadelphia—p 392
 Chronic Occlusion of Portal Vein J P Simonds Chicago—p 397
 *Fibrosarcoma of Soft Parts with Especial Reference to Recurrence and Metastasis S Warren and G N J Sommer Jr Boston—p 425
 Effect of Fat Introduced into Jejunum by Fistula on Motility and Emptying Time of Stomach J M Waugh Rochester Minn—p 451
 Sarcoma of Stomach F Glenn and E Douglas New York—p 467
 *New Test for Evaluating Circulation in Venous System of the Lower Extremity Affected by Varicosities H R Mahorner and A Ochsner New Orleans—p 479
 The Problem of Wound Healing I Effect of Local Agents L S Smelo Philadelphia—p 493
 Estrus Cycles in Mice of Cancerous and Noncancerous Strains A Brunswick and A D Bissell Chicago—p 515
 Review of Urologic Surgery A J Scholl Los Angeles F Hinman San Francisco A B Hepler Seattle R Gutierrez New York G J Thompson and J T Priestley Rochester Minn J Verbrugge Antwerp Belgium and V J O'Connor Chicago—p 521

Arrhenoblastoma of Ovary—Behrend and Levine present a case of testicular adenoma tubulare of the ovary. Masculine features were lacking; vaginal atresia; lack of a cervix; rudimentary uterus and amenorrhea were present. The case emphasizes that external feminine characteristics are not incompatible with a gonad containing testicular structures. As is well known the other endocrine glands, such as the adrenal cortex, the pituitary body and the pineal gland play an auxiliary though important part in sex differentiation and may well account for the lack of masculinization in some cases of arrhenoblastoma. Thus, in a case of pseudohermaphroditism in which feminine traits predominate, the only gonads present may be testes. Masculinization in a person with arrhenoblastoma usually disappears with the removal of the affected ovary unless recurrence takes place on the opposite side (Moots).

Fibrosarcoma of Soft Parts—In an effort to answer the question of the choice of treatment for fibrosarcoma of the soft parts that is constantly recurring with proponents of radical or conservative surgical intervention and of irradiation, Warren and Sommer analyzed the records of 163 cases of the New England Deaconess Hospital. Fibrosarcoma was found not to be a disease of the young; the mean age at onset in both sexes was about 50 years. Trauma was not an etiologic factor. Most patients have been treated by operation. Radiation therapy has been disappointing. The interval from the onset of symptoms to the beginning of treatment bears no definite relation to the outcome of the treatment. The neurogenic fibro-

carcoma may be recognized as a definite subtype. The appearance of tumor giant cells indicates higher malignant incidence, as was evidenced by a higher mortality and a shorter duration of the disease in the cases studied. Recurrence is frequent (sixty-four cases) and has grave prognostic significance. However, eight patients are alive and well three years after treatment of their last recurrence. Recurrence usually is early and is rare after the first year. Metastasis is infrequent (thirty-four cases) and usually occurs after local recurrence. Metastasis is most frequent in the lungs and may involve regional lymph nodes. Fibrosarcoma involving the head or neck is serious; only 21 per cent of the patients are alive and well three or more years after the onset. Seventeen cases of adenofibrosarcoma of the breast are reported, all but one of the patients have recovered. Lymph nodes were not involved. In two cases fibrosarcoma was apparently secondary to changes caused by irradiation. Ten instances of multiple tumor were found.

Test of Circulation in Venous System of Lower Extremity—Mahorner and Ochsner determine the direction of flow of blood in the venous system of the lower extremity affected by varicosities and evaluate the competence of the valves of the long saphenous vein and communicating veins between the superficial and the deep systems of the thigh in the following manner. The degree of prominence of the varicose veins on standing is observed. It is essential to have a good light placed behind the observer, whose horizontal plane of vision is not much higher than the hips of the patient, and directed toward the area of the room immediately in front of him. The patient then walks to and fro, and any changes in the size of the veins as compared with their size in the standing position are noted. Usually as the patient walks the veins become less prominent, owing to efficient pumping action by the muscles on the deep veins. After the patient has passed in review several times, a tourniquet of thin rubber tubing is tied around the upper third of the thigh, sufficiently tight to compress the superficial veins. The patient then walks at the same rate of speed over the same course as before, and the relative size of the veins is compared with their size when the patient walks without the tourniquet. Usually there is marked diminution (from 50 to 75 per cent) in the prominence of the varicosities. The patient stops walking and the tourniquet is removed and reapplied in the middle third of the thigh, again sufficiently tight to obstruct the flow of blood in the superficial veins. The patient again walks, and the prominence of the veins in the leg is compared with their appearance when the patient walks without the tourniquet and with the tourniquet applied around the upper third of the thigh. Similarly, the patient walks with the tourniquet around the lower third of the thigh. Frequently, when the improvement in appearance is only moderate with the tourniquet around the upper third of the thigh it is marked when the tourniquet is around the lower third. In general, this test may have three results. 1 A frequent observation (40 per cent of the instances) is that improvement is greatest when the patient walks with the tourniquet around the lower third of the thigh and less when the tourniquet is around the middle or the upper third of the thigh, but that even then it is more marked than when the patient is walking without the tourniquet. 2 The most frequent observation is that there is no difference in the size of the veins when the tourniquet is in any one of the three positions and that yet there is definitely more improvement when the tourniquet is around the thigh than when it is not. 3 Least frequently there is no improvement with the tourniquet or the veins are more prominent when the tourniquet is around the thigh than when it is not. If the test shows that the communicating veins between the superficial and the deep system are markedly incompetent and high ligation is made, the patient is somewhat benefited, but little more than if a sclerosing solution should be injected into the veins of the calf without ligation. In instances in which this condition exists, low ligation gives by far the greatest immediate improvement. Because fewer recurrences through collateral veins follow high ligation, in addition to this procedure low ligation may be made for an optimal effect and to prevent recurrence through communicating veins.

Colorado Medicine, Denver

33 593 664 (Sept.) 1936

Pollution of Animas River J R Earp Santa Fe N M—p 606
Liver Failure Cause of Unexpected Postoperative and Organic Death
G Z Williams Denver—p 609
Rocky Mountain Spotted Fever R L Cleere Denver—p 617

Liver Failure—Williams discusses the accumulating evidence which points to liver failure as the cause of many unexplained deaths. The syndromes characterizing these deaths are divided into three classes. 1 Those in which there is a sudden onset with high fever, coma and rapid death without signs of uremia, at necropsy, only necrosis of liver cells is found. 2 Those in which there is a similar picture with later onset and longer duration, with more gradual increase in symptoms including signs of uremia before death, necropsy discloses liver damage of varying degree accompanied by degeneration of renal tubule cells. 3 Those cases in which slowly increasing exhaustion, muscular weakness, subnormal temperature and decreasing blood pressure progress to terminal vascular collapse, coma and prostration, necropsy usually shows some change of the liver cells, if not definite necrosis. Liver deaths are not limited to postoperative incidence but occur also in many organic diseases of chronic debilitating nature, acute toxemias, liver trauma and certain drug poisonings. Liver functions cannot be quantitatively determined by any single test, but several reliable tests simultaneously performed are required. The incidence of so called liver death may be markedly lowered by avoiding surgery when patients are found to possess low physiologic hepatic reserves and by rehabilitating the livers of these patients. Postoperative support of liver function is emphasized. Forcing fluids in large quantities by all routes dilutes excessive toxins in their passage through the liver, adrenals and kidneys and promotes excretion of these harmful substances. Intestinal elimination by mild saline catharsis avoids undesirable absorption of putrefaction products. Reducing ingested proteins diminishes the load of toxic protein decomposition compounds on the liver cells. Increasing carbohydrate intake by large amounts may rapidly build up liver glycogen reserve and combat catabolic degeneration of liver cells. Administering large amounts of calcium intravenously as the gluconate, when urgent, stimulates liver functions and speeds its recovery. Giving dilute hydrochloric acid by mouth to replenish blood and tissue chloride depletion helps to maintain normal water balance. The acid, further, greatly aids intestinal absorption of calcium. Injections of adrenal cortex extract intramuscularly, if available in biologically active preparations, will definitely aid in supporting the patient's overtaxed adrenals. Ingestion of adequate quantities of sodium ions is of equal importance for promoting function. These principles of treatment are equally valuable in preoperative rehabilitation of physiologic hepatic reserve and postoperative promotion of liver metabolism.

Johns Hopkins Hospital Bulletin, Baltimore

59 73 132 (Aug.) 1936

Vesenteric Tumor Associated with Pregnancy Report of Case E
Henriksen Baltimore—p 73
*Jaundice Methods of Diagnosis and Treatment of Its Causes L
Martin, Baltimore—p 78
Progressive Exophthalmos Following Thyroidectomy H M Thomas
Jr and A C Woods Baltimore—p 99
Studies on Immunizing Substances in Pneumococci A Effect of
Alkalis on Immunizing Properties of Type I Pneumococcus Polysac-
charide L D Felton and B Prescott Baltimore—p 114

Jaundice—Martin believes that in discussing the subject of jaundice, there is a tendency to overemphasize the chemical approach and to fail to develop the clinical side. With jaundice established it is possible, with the aid of the history, physical examination and various tests to locate the source of the mischief in a large proportion of patients. The more common routine laboratory examinations, including Van den Bergh tests and determinations of urobilinogenuria and bilirubinuria, are most often sufficient for a diagnosis. The diagnosis once made, therapy, be it specific, supporting or surgical may then be instituted. There will be a certain number of cases in which the diagnosis will remain unsolved. In these the most important decision will lie between the choice of medical or surgical treatment. In youth and early adult life the pathologic condition of the liver is generally a hepatitis for which surgery

affords no aid. In later life the importance of the consideration of surgery is paramount. A stone of the common duct, if permitted to obstruct for too long a period, will cause destruction of liver cells. In cases of carcinoma of the head of the pancreas surgery is not only palliative but of value in prolonging and affording a comfortable existence. Beyond middle age, when the diagnosis lies between some obstructive condition and a hepatitis (generally infectious), surgery is indicated after an adequate period of observation. Lives may be saved, and if the condition turns out to be one of a medical type, little damage has been done particularly if there has been proper preoperative care and the choice of anesthetics has been limited to those least toxic to the liver.

Journal of General Physiology, New York

19: 899-1022 (July 20) 1936

- Kinetics of Saponification of Iodoacetic Acid by Sodium Hydroxide and by Certain Alkaline Buffer Solutions R. Brdička, Berkeley, Calif.—p. 899
- Absorption of Egg Albumin on Collodion Membranes P. Dow, New Haven, Conn.—p. 907
- Ionic Transference Numbers in Cellophane Membranes T. Teorell, New York—p. 917
- Changes in Thickness of Red Blood Corpuscle Membrane H. J. Curtis, Cold Spring Harbor, Long Island, N. Y.—p. 929
- Adaptation of Cutaneous Tactile Receptors. IV. Electrolyte Content of Frog Skin M. A. Rubin, Worcester, Mass.—p. 935
- Id. V. Release of Potassium from Frog Skin by Mechanical Stimulation H. Hoagland and M. A. Rubin, Worcester, Mass.—p. 939
- Id. VI. Inhibitory Effects of Potassium and Calcium H. Hoagland, Worcester, Mass.—p. 943
- Quantity of Electricity and Energy in Electrical Stimulation H. A. Blair, Rochester, N. Y.—p. 951
- Intermittent Stimulation by Light. V. Relation Between Intensity and Critical Frequency for Different Parts of Spectrum S. Hecht and S. Shlaer, New York—p. 965
- Id. VI. Area and Relation Between Critical Frequency and Intensity S. Hecht and E. L. Smith, New York—p. 979
- Isolation from Beef Pancreas of Crystalline Trypsinogen, Trypsin, Trypsin Inhibitor and Inhibitor-Trypsin Compound M. Kunitz and J. H. Northrop, Princeton, N. J.—p. 991

Journal of Immunology, Baltimore

31: 59-166 (Aug.) 1936

- Reaction of Normal and Rabbit Pox Immune Adult Rabbits to Vaccination with Vaccine Virus P. D. Rosahn, C. K. Hu and Louise Pearce, New York—p. 59
- Reaction of Nursing Rabbit to Vaccination with Vaccine Virus Louise Pearce, C. K. Hu and P. D. Rosahn, New York—p. 73
- Diphtheria Toxin Production on Broths Made from Dried Complete Mediums W. E. Bunney and Leona E. Thomas, Lansing, Mich.—p. 95
- Specificity of Precipitins for Serum H. R. Wolfe, Madison, Wis.—p. 103
- *Antibody in Relation to Immunity in Acute Poliomyelitis J. A. Kolmer with assistance of Anna M. Rule, Philadelphia—p. 119
- Lipids and Immunologic Reactions. II. Further Experiments on Relation of Lipids to Type-Specific Reactions of Antipneumococcus Serums F. L. Horsfall, Jr. and K. Goodner, New York—p. 135
- Reaction Between Diphtheria Toxin and Formaldehyde Edna M. Follensby and S. B. Hooker with assistance of Elizabeth H. Tayan, Boston—p. 141
- New Antigen and Its Use in Serodiagnosis of Syphilis A. Wadsworth and Rachel Brown, Albany, N. Y.—p. 155

Antibody in Relation to Immunity in Poliomyelitis—Kolmer discusses the possible bearing the relation of antiviral antibody has to resistance and immunity in poliomyelitis, realizing that humoral immunity was probably only part of the mechanism and that tissue immunity may be more important. He believes that this antibody plays some part in both natural and acquired resistance. The amounts occurring in the blood of normal and convalescent human beings do not appear sufficient to establish its value clearly in passive immunization of human beings in the amounts that have been commonly administered but there is no reasonable doubt that large doses are sometimes capable of protecting a percentage of monkeys when given within a day or two after inoculation with the virus. While this antibody can be produced by the immunization of horses, goats and sheep with the virus it may be that both monkeys and human beings produce it more readily probably because both are susceptible to the virus. It is also true that this antibody is apparently without any neutralizing effect on intracellular virus so that it has proved without benefit in the treatment of both monkeys and human beings once pronounced paralysis has occurred. But it would appear that large

amounts are capable of preventing the virus from entering cells, and, if this is true, its production by vaccination with active virus may be of real value in addition to tissue immunity in affording protection against the disease. Its administration in large doses to human beings with paresis or early paralysis may prevent progressive infection of the spinal cord, so that its therapeutic value in human beings, while uncertain, is by no means clearly disproved. Whether or not some human beings are constitutionally unable to produce the antibody in sufficient amounts to prevent the paralytic type of the disease, when infected with the virus or on vaccination, is both likely and expected just as has been found true in antibody production and immunity against smallpox, diphtheria, typhoid and scarlet fever. Investigations indicate, however, that multiple doses of ricinoleated vaccine are capable of producing the antibody in children in amounts comparable to those found in the blood of convalescents and normal adults. Whether or not immunization with ricinoleated vaccine of active virus engenders a protective degree of tissue resistance in the absence of demonstrable amounts of neutralizing antibody cannot be stated, but both the possibility and the probability exist.

Journal of Thoracic Surgery, St. Louis

5: 567-692 (Aug.) 1936

- Special Training for Thoracic Surgery C. Eggers, New York—p. 567
- Training of Thoracic Surgeon from Standpoint of the General Surgeon E. A. Graham, St. Louis—p. 575
- Training of Surgeon Who Expects to Specialize in Thoracic Surgery J. Alexander, Ann Arbor, Mich.—p. 579
- Training of Thoracic Surgeon from Standpoint of the Physiologist E. N. Packard, Saranac Lake, N. Y.—p. 583
- Wounds of the Heart. Report of Thirteen Cases D. C. Elkin, Atlanta, Ga.—p. 590
- *Further Data on Establishment of New Blood Supply to Heart by Operation C. S. Beck, Cleveland—p. 604
- Reduction of Cardiac Irritability by Epicardial and Systemic Administration of Drugs as Protection in Cardiac Surgery F. R. Mautz, Cleveland—p. 612
- Study of Cardiopericardial Adhesions R. M. Hosler and J. E. Williams, Cleveland—p. 629
- Superior Vena Caval Thrombosis. Review of Literature and Report of Cases of Traumatic and Infectious Origin A. Ochsner and J. L. Dixon, New Orleans—p. 641

Establishment of New Blood Supply to Heart by Operation—Beck reports that up to the present time he has operated on eleven patients with sclerosis of the coronary arteries and angina pectoris. These patients were totally disabled and constituted an extremely bad risk group for any operative procedure. Six patients are living and five are dead. The tissues available to the heart for a blood supply are the pectoral muscle, the triangularis sterni muscle, the intercostal muscle, the intercostal vessels, the internal mammary vessels, subcutaneous fat, mediastinal fat and the parietal pericardium. Two developments are being carried out. One concerns the reduction in irritability of the heart at the operating table by the application of drugs to the surface of the heart; the other consists in making a vascular bed available to the myocardium by a much more simple type of operation. The author says that in his first experiments, which he conducted in collaboration with Tichy, the mesothelial envelop around the heart was destroyed by roughening the lining of the parietal pericardium and also the epicardium by means of a bur. A new vascular bed was constructed by bringing various grafts onto the myocardium. The tissues that were used for the new vascular bed were fibrous pericardium, pericardial fat, pedicle grafts of skeletal muscle from the chest wall, and omentum brought up through an opening in the diaphragm. Anastomoses between the grafts and the heart could be demonstrated in three weeks after the grafts were placed. Anastomoses increased after a physiologic need for blood was established in the myocardium. The physiologic need for blood is perhaps more accurately defined as a pressure differential between the two vascular beds. It was produced by occlusion partial or complete, of major coronary arteries. After citing several other experiments by which the heart was given a collateral vascular bed the author says that two types of experiment are presented for comparison. A. Complete ligation in one stage of four or five peripheral branches of the coronary arteries over the apex of the left ventricle was always fatal. Ventricular fibrillation developed. B. The right and both major branches of the left coronary

arteries could be occluded by about one third of their cross-section in one stage with recovery. The total amount of blood going through the coronary system in A can be assumed to be greater than in B yet A was a fatal experiment and B resulted in recovery. These experiments bring out an entirely new point so far as the heart is concerned, namely, the importance of an equal distribution of blood to the myocardium. Total coronary blood flow is one factor that concerns the preservation of the heart beat but distribution of blood flow is another important factor. The collateral vascular bed can function in effecting an equal distribution of blood to various parts of the myocardium. This is done in two ways first by bringing blood from extracardiac sources into the myocardium, and, second, by transporting blood from one part of the heart where the circulation is good to another part of the heart where the circulation is deficient. In the latter respect the grafts act as anastomotic bridges connecting the beds of different vessels.

Medical Annals of District of Columbia, Washington

5 223 254 (Aug.) 1936

- Administration of Digitalis L. C. Ficker Washington—p. 223
Action of Digitalis in Congestive Heart Failure B. W. Leonard Washington—p. 227
Clinical Application of Venous Pressure Measurement H. H. Hussey Washington—p. 232
Clinical Significance of Blood Circulation Time as Determined by Saccharin Test L. M. Drennan Jr. Washington—p. 238
Hepatosplenography with Stabilized Thorium Dioxide Solution Follow Up Study of 200 Patients Examined Over Period of Five Years W. M. Yater L. S. Otell and H. H. Hussey Washington—p. 241
Acromegaly Case Study from the George Washington University Endocrine Clinic, Elizabeth Parker and H. S. Douglas Washington—p. 247

Clinical Application of Venous Pressure Measurement

—Hussey says that he used a method and an apparatus devised by Griffith Chamberlain and Kitchell. The apparatus consists of a 20 gage needle and a 2 cc. syringe having a sidearm to which a calibrated glass measuring tube is connected by means of rubber tubing of about the size of a 14 F catheter. The other end of the glass tube is connected by means of another short piece of rubber tubing to a glass reservoir of any description. The entire apparatus can be sterilized by boiling. Physiologic solution of sodium chloride is placed in the reservoir and allowed to fill the set, which is then ready to use. The patient is placed in the supine position, a vein is selected at the elbow and the needle of the apparatus is introduced into the vein. The plunger of the syringe is drawn back, allowing saline solution to run through the sidearm into the syringe and thence into the vein. Next, the reservoir is detached from the apparatus and the zero point of the calibrated tube is placed on a plane with the midaxillary line of the patient. This plane has been selected arbitrarily as approximately level with the right atrium of the heart and as a simple means of standardizing readings. The saline solution will continue to fall in the glass tube, fluctuating somewhat with respiration and stopping at a point which indicates the height of the venous blood pressure in terms of millimeters of saline solution. With this technique it has been found that normal persons have a peripheral venous blood pressure of from 40 to 120 mm of saline solution. The author shows that the principal factors influencing the blood pressure in the peripheral veins of normal persons are the heart action, gravity, the intrathoracic pressure, the blood volume and muscular exercise. He presents the results of study of the venous pressure in 150 selected patients. Right ventricular failure always causes a rise in venous pressure above normal, and this rise may be the means to the establishment of the diagnosis of heart failure. Repeated measurements of venous pressure in patients with congestive heart failure are useful to follow the clinical course of the disease and have considerable prognostic importance. High venous pressures in lobar pneumonia have an unfavorable prognostic significance. Measurement of the blood pressure in the peripheral veins is valuable in the diagnosis of cardiac compression and is helpful in estimating the efficacy of surgical treatment in this condition. Measurement of the venous pressure is useful in the diagnosis of mediastinal tumors and in observing the response of certain types to roentgen therapy. Pleural effusion and pneumothorax do not affect venous pressure unless they

are sufficient to provoke dyspnea. Measurement of venous pressure is useful in the regulation of artificial pneumothorax therapy.

Pennsylvania Medical Journal, Harrisburg

39 845 942 (Aug.) 1936

- Clinical Significance of Skeletal Roentgen Ray Assessment in Children T. W. Todd Cleveland—p. 845
Artificial Ankylosis of Joints J. A. Heberling Pittsburgh—p. 848
Blood Pictures in Middle Ear Infection with Especial Reference to Differential Diagnosis and Prognosis M. M. Strumia Bryn Mawr—p. 852
Noncalculous Disease of Gallbladder G. P. Muller, Philadelphia—p. 857
Histidine Treatment of Peptic Ulcer F. A. Weigand Philadelphia—p. 860
Pityriasis Rubra Pilaris with Particular Reference to Vitamin Medication and Dietary Control M. F. Pettler Beaver Falls—p. 864
Undescribed Lesion of Shoulder Girdle of Frequent Occurrence with Especial Reference to Sprain of Rhomboideus Minor Muscle J. P. Replogle Johnstown—p. 866
Inflammation of Urinary Bladder Report of Case of Gangrenous Cystitis W. C. Bryant Pittsburgh—p. 869
Ureteral Transplantations G. V. Foster Pittsburgh—p. 874

Histidine Treatment of Peptic Ulcer—Weigand shows that histidine treatment consists of the daily intramuscular injection, for twenty-four days of 5 cc of a 4 per cent solution of histidine monohydrochloride. No specific dietary regimen is used other than the avoidance of foods obviously so rough as to promise possible mechanical injury. The patient is ambulatory during this treatment and is able to follow his usual daily routine. This treatment was carried out on patients most of whom were in an acute attack. After giving brief histories of twelve of these patients, the author concludes that the intramuscular injection of histidine monohydrochloride should be further studied as a therapeutic measure in the treatment of peptic ulcer. In cases in which recurrence has occurred after surgical intervention, its use should be given consideration. Because of the prompt symptomatic relief afforded, emphasis must be placed on thorough x-ray follow up in addition to the customary clinical observations.

Undescribed Lesion of Shoulder Girdle—Replogle states that an analysis of 250 successive cases of shoulder injury observed at the Bethlehem Steel Hospital, Johnstown, Pa., excluding burns and minor injuries, revealed twenty-six varieties of lesions in and about the shoulder. Twenty-five per cent of the lesions are sprains. One of the frequent traumatic lesions of the shoulder is sprain of the rhomboideus minor muscle. After describing and explaining the symptomatology of this sprain, which occurs usually in those performing heavy or strenuous labor such as swinging a sledge, firing a furnace or lifting a heavy weight, the author takes up the treatment, showing that it is simple and based on anatomic lines to cause relaxation of the overstretched muscle. The shoulders are thrown back so as to lessen the interscapular space, and wide crisscross adhesive straps are applied for the maintenance of this position. The arm is placed in a sling and a small pad placed under the adhesive plaster over the point of tenderness to hasten the absorption of the serous effusion at the point of rupture or strain. This treatment gives immediate relief from aching, and pain on abduction is greatly reduced. The author several times removed the cross strapping too early and patients requested its reapplication to obtain relief. He concludes that the frequency of occurrence of sprain of the rhomboideus minor, the unusually constant symptomatology and clinical picture and the efficacy of simple and proper treatment together with the fact that it is of sufficient seriousness to cause industrial disability, justify a description of the lesion and demand caution in its diagnosis.

Wisconsin Medical Journal, Madison

35: 685 768 (Sept.) 1936

- The Nervous Patient in the General Practice of Medicine F. J. Hirschboeck Duluth, Minn.—p. 701
Cancer Mortality in Wisconsin General Hospital M. Burke Madison—p. 709
Carcinoma of Lung and Its Differential Diagnosis A. Arkin Chicago—p. 719
Syphilis and Carcinoma of Stomach Differential Diagnosis in Patients with Systemic Syphilis Case Reports Marie L. Carns Madison—p. 725

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

20: 497-560 (Sept.) 1936

- Some Effects of Gamma Radiation on Developing Rat Retina. A. Glucksmann and Katharine Tansley—p. 497
- *Inflammatory Disease in Eye Caused by Gout. D. J. Wood—p. 510
- Swelling Pressures of Normal and Glaucomatous Vitreous Bodies. S. Duke-Elder, H. Davson and G. H. Benham—p. 520
- Glycerol Trimyristate (Nitroglycerin) in Treatment of Hemeralopia (Night Blindness). R. de R. Barondes—p. 528
- Cataracta Brunesceus. Study of Nature of Coloring Substance. Elena Puscaru and J. Nitzulescu—p. 531
- Posterior Needling in Treatment of Lamellar and Other Forms of Soft Cataract. A. J. Ballantyne—p. 540
- Incidence of Cataract at Certain Age Periods in South Indian Districts. R. E. Wright—p. 545

Inflammatory Disease in Eye Caused by Gout.—Cases of ocular disease which correspond exactly with those described by Jonathan Hutchinson, and attributed to gout, are encountered from time to time. During the last fifteen years Wood has dealt with four such cases. In them no other gross or manifest evidence of gout existed, and therefore other and more modern etiologies had been sought without success. The first sign of trouble was an attack of episcleritis fugax, and this continued to form part of the syndrome through the course of the trouble. The proof that gout is the principal cause is partly negative, in that the pathologic conditions do not resemble any others that the author has seen. On the positive side are to be placed the fact that in three cases tenonitis was present and that episcleritis periodica fugax was the commencement in all the cases. In three cases the patient's diet and use of alcohol were such as would naturally produce a gouty condition, and in one the cessation of beer and diminution of a heavy meat diet put an end to the troubles. Besides these points in the two cases in which an examination was made the uric acid content in the blood was greatly increased during the acute attacks.

British Medical Journal, London

2: 375-412 (Aug. 22) 1936

- Ganglionectomy in Treatment of Severe Polyarthritis and Osteo-Arthritis. A. Young—p. 375
- Maternity Services. E. Maclean—p. 382
- Id. Part Played by Education of Medical Students. F. J. Browne—p. 384
- The Problem of the Midwifery Services from Standpoint of the Country Practitioner. R. E. Moyes—p. 386
- *Hormone Regulation of Number of Blood Platelets in the Blood. H. Zondek and Kaatz—p. 387
- Blood Transfusion in Childhood. D. Browne—p. 389

Hormone Regulation of Number of Blood Platelets.—Zondek and Kaatz show that the blood platelet count in the peripheral blood is increased by the hormone of the thyroid gland. The action is more constant than in the case of red blood cells. The increase usually appears from twenty-four to forty-eight hours after the administration of the hormone and has disappeared within about seventy-two hours. The thyrotropic hormone acts in the same way, but its action is more protracted. In a case of chronic thrombopenia in a child a gradually increasing number of platelets was counted after repeated administration of thyrotropic hormone (single dosage 500 rabbit units). Adrenal cortex extract showed a diminishing effect on the number of blood platelets in a large number of experiments but in several other experiments this result was not obtained.

Edinburgh Medical Journal

43: 481-544 (Aug.) 1936

- Formation of Gallstones. C. F. W. Illingworth—p. 481
- Clinical Recollections and Reflections. V. Running' Nose. G. E. Martin—p. 498
- Some Modern Problems Connected with Cerebrospinal Fluid. J. G. Greenfield—p. 510
- Studies on Carbohydrate Metabolism in Mental Disorders. I. Glucose Tolerance Tests in Manic-Depressive Insanity and Other Depressions. H. Tod—p. 524
- Virus Bodies in Lymphogranuloma Inguinale (Chlamidic Bubo). A. C. Coles—p. 528

Journal of Physiology, London

87: 199-310 (Aug. 19) 1936

- Neuromuscular Transmission in Crabs. B. Katz—p. 199
- Biologic Assay of Cortical Hormone by Survival Method in Adrenal-ectomized Young Rats and on Influence of Salt Content of Hormone Extract. P. Schultzer—p. 222
- Renal Elimination of Phenol Red in Dog. H. L. Sheehan—p. 237
- Sympathetic Vasodilatation in Skin and Intestine of Dog. Edith Bulbring and J. H. Burn—p. 254
- Respiration and Functional Activity. W. Deutsch and H. S. Raper—p. 275
- Effects of Vitamin E Deficiency on Thyroid Gland of Rat. Eleanor Singer—p. 287
- Inhibition of Water Diuresis by Pituitary (Posterior Lobe) Extract and Its Relation to Water Load of Body. Mary Pickford—p. 291
- Mechanism of Rhythmic Changes in Caliber of Bronchi During Respiration. M. Ellis—p. 298

Medical Journal of Australia, Sydney

2: 139-170 (Aug. 1) 1936

- The Sir Richard Stawell Oration. T. P. Dunhill—p. 139
- *Frequency of Micturition in the Female. W. J. Close—p. 147
- Operation for Thénar Paralysis. N. D. Royle—p. 155

Frequency of Micturition in Female.—Close states that it is in the lower part of the urinary tract that the lesions responsible for the ailments of frequent micturition peculiar to women occur. That is that part which developmentally belongs to the wolffian duct—the trigon, urethra and their adnexal glands. The following pathologic conditions affecting the female urethra and trigon are discussed separately: (1) urethritis embodying acute generalized infections due to the gonococcus, a gram-negative extracellular diplococcus, *Bacillus coli*, the enterococcus and mixed organisms such as staphylococci, diphtheroids and trichomonads, together with the foregoing organisms, and chronic glandular inflammations of the deep "prostatic" glands, submucous follicles or Skene's glands, which may be infective, owing to organisms mentioned non-infective conditions of the so called "prostatic" glands or passive venous congestion, (2) stricture of the urethra accompanied by chronic infection as cause or effect, (3) carunculae, (4) trigonitis pseudomembranosa, or trigonitis exfoliativa, (5) senile atrophic urethritis, (6) diverticula, (7) defects in the supports of the lower part of the urinary tract and (8) neuroses.

Japanese Journal of Experimental Medicine, Tokyo

14: 197-310 (June 20) 1936

- *Studies on Virus of Lymphogranuloma Inguinale. Nicolas Favre and Durand. Sixth Report. Inoculation Experiment of Virus in Small Laboratory Animals Beside Monkeys and Mice. Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii and J. Okanishi—p. 197
- Id. Seventh Report. Cultivation of Virus by Tissue Culture Method. Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii, J. Okanishi, T. Goto and S. Shimizu—p. 207
- Id. Eighth Report. Studies on Cultivation of Virus After Tamura, Meyer and Anders Reports. Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii, J. Okanishi, K. Kanazawa and H. Yamada—p. 221
- Experimental Studies on Mechanism of Development of Pneumonia by *Pneumococcus* Residue Substances. H. Nakajima—p. 239
- Influence of Lymph Gland and Other Organ Cell Constituents Introduced Parenterally on Blood Lipase Content. M. Yamaguchi—p. 273
- Specific Toxic Substance of *Bacillus Dysenteriae* Komagome B₁ (Flexner Type). K. Kobayashi—p. 295

Virus of Inguinal Lymphogranuloma.—Miyagawa and his co-workers found that by the intracerebral inoculation of inguinal lymphogranuloma virus only squirrels among guinea pigs, albino rats and domestic fowls show typical cerebral symptoms with typical pathologic changes and numerous special granulocorpuscles. Under the intratesticular inoculation there appeared typical pathologic changes and granulocorpuscles in the albino rats and squirrels but not in the guinea pigs and rabbits. The affected testicular material is capable of causing typical infection with special granulocorpuscles in mice. By the intradermal inoculation into guinea pigs, albino rats, rabbits, squirrels and domestic fowls typical papules occurred with special granulocorpuscles in the guinea pigs, albino rats, mice and squirrels and the content of the papules caused typical symptoms by means of intracerebral inoculation into mice. By the dermal passage of the virus, the virulence of which was already decreased in the successive passage through mice brains and through guinea pigs and albino rats the virulence of the virus increases so remarkably that it again causes severe symptoms in mice. From this fact it may be said that the virus has a certain dermatotropism. Special granulocorpuscles are always found when the disorder is produced distinctly.

Archives de Médecine des Enfants, Paris

30 569 632 (Sept.) 1936

- Vanthomatos of Skin and Hand Schuller Christian Syndrome J R Dreyfus—p 569
*Treatment of Infantile Diarrhea by Raw Apples S T Bakal and R M Sigal—p 578
Fetitus of Nursing and Young Child S Mekler—p 585

Treatment of Infantile Diarrhea by Raw Apples—Bakal and Sigal report fifty one cases of infantile diarrhea. Twenty-eight children were less than 2 years of age, eighteen were between 2 and 5 and five ranged from 6 to 10. In all instances the authors introduced a forty-eight hour diet of apples without preliminary treatment. In only two cases did the diet last only one day because the children refused the apples. The skins and cores of the apples were removed. In most instances the children ate the apples willingly. During this diet the patients received no other nourishment. Liquids were given as needed. The first day of transition toward a regular diet the patients were given such foods as rice gruel, bouillon and gelatin. By the third day vegetable puree could be given. The results obtained were good. During the first day the stools became thick, from five to seven hours after the first apple meal and developed the odor and appearance of pureed apples. Toward the end of the second and third days the stools became formed, the general condition improved, the toxic phenomena disappeared and the temperature fell. During the apple diet the weight of the children decreased, but it returned rapidly to normal later. The history of the illness was almost the same in all the cases. The authors believe that the rapidity of action, the duration of effect and the absolute innocuousness of the apple diet should lead toward application of this method not only in the clinic but also in ambulatory practice.

Journal de Médecine de Lyon

17: 563-592 (Sept. 5) 1936

- *Acute Curable Subarachnoiditis in Young Subjects J Chalier M Plauchu and L. Badinand—p 563
Measles Meningo-Encephalitis. J Chalier M Plauchu and L. Badinand—p 579

Subarachnoiditis in Young Subjects—Chalier and his colleagues report twenty personally observed cases of acute benign lymphocytic meningitis in young subjects. They believe that the latter name is inappropriate. Actually the cerebrospinal fluid albumin is ordinarily little increased, certainly less than in acute or subacute meningitis. By contrast the level of sugar instead of decreasing as in meningitis is in general increased initially and returns rapidly to the neighborhood of normal. The leukocytosis, which is marked at the beginning, does not increase as in tuberculous meningitis but usually decreases with rapidity. A cytologic examination reveals the frequent presence of cells the characters of which allow them to be classed with the monocytes. Because of their frequently elevated level, these elements, so far poorly understood, have an important prognostic value. They augur a recovery. The chemical observations oppose the opinion that this is a true meningitis. Furthermore, the frequently elevated number of monocytes testifies against the qualification of the term meningitis by adding "lymphocytic." The term that seems in the authors opinion to describe the condition best is "acute, curable subarachnoiditis in young subjects."

Measles Meningo-Encephalitis—Chalier and his colleagues discuss the meningeal and encephalitic manifestations of measles. They report ten cases personally observed. These complications almost always arise after the disappearance of the measles exanthem. They consist, according to the case, in convulsions, torpor, somnolence, coma, hyperthermia and meningeal signs. Various forms can be described: (1) acute or subacute generalized forms, (2) a localized hemiplegic form, (3) a form of hemorrhagic meningo-encephalitis, (4) a pure or predominantly meningeal form and (5) a slight or larval form. The cerebrospinal fluid shows a slight increase in albumin and sugar and a slight or marked cellular reaction usually in the form of lymphocytes and monocytes. The diagnosis must be differentiated especially from the meningo-encephalitis due to otitis and mastoiditis. Hyperthermia or association with a bronchopneumonia constitutes the most unfavorable

prognostic sign. The anatomic foundation is represented especially by generalized deterioration of the brain, predominantly in the white substance. Microscopically this is revealed by multiple lesions, inflammatory, degenerative and proliferative. The pathogenesis remains an object of discussion. If there exists a post measles meningo-encephalitis, is it or is it not due to the measles virus? Further research is necessary on this point.

Archivio di Ostetricia e Ginecologia, Naples

43: 319 396 (Aug.) 1936

- *Rupture of Uterus G Tesauro—p 319

Rupture of Uterus—According to Tesauro spontaneous or posttraumatic rupture of the uterus complicating labor takes place more frequently in multiparas than in primiparas and generally in women more than 35 years of age. The frequency of the complication is 0.3 per cent. Predisposition of the uterine wall due to lesser resistance of the organ by previous febrile puerperiums, obstetric operations and inflammatory or cicatricial processes exists in most cases. The author reports thirty cases. Spontaneous rupture was produced in the scar of a myomectomy in one, by shoulder presentation in four, by pelvic stenosis in two, by face presentation in one and for other causes in six women with normal pelvis and fetuses in vertex presentation. The rupture was complete in twenty-three cases; it took place at the lower segment of the uterus in twenty-two and at the fundus in one. In one case the bladder and in another the vagina and the bladder were involved in the tear. Subtotal hysterectomy was performed in twenty-nine cases. A drain left in the ruptured area (subperitoneal) was the only treatment in one case. Hysterectomy was closed without drainage in one case, after a Mikulicz drain had been left in three cases and two drains in twenty-three. In the latter group a Mikulicz drain and an abdominal and vaginal gauze drain were left. According to the author, this is the reason for the great number of recoveries obtained (74 per cent). Two patients died during the operation, six from septic or pulmonary complications within five days and one from embolism, within twenty-five days of the operation. The operative mortality rate was 25 per cent.

Haematologica Archivio, Pavia

17: 553 644 (No. 7) 1936

- Metabolism of Proteins Following Transfusion of Homologous Blood in Dogs in Sustained Nitrogen Equilibrium C Zummo—p 553
Diameter of Erythrocytes in Normal and Pathologic Conditions G Cozzutti—p 567
*Neurologic Complications of Pernicious Anemia Clinical Study A Baserga—p 603

Neurologic Complications of Pernicious Anemia—Baserga reviews the literature on neurologic complications of pernicious anemia. There are two types of neurologic complications: those of moderate intensity in pernicious anemia not treated with liver and those of the typical subacute combined degeneration of the spinal cord (Lichtheim syndrome). Neurologic complications of moderate intensity are so frequent that they are considered characteristic symptoms of pernicious anemia. Grave forms are rare. They result in invalidism by paralysis and develop only in patients who have suffered long and been insufficiently treated. Intramuscular injections of liver in daily doses corresponding to 700 Gm if given by mouth and for long periods, would prevent neurologic complications, control those already developed and, in some cases, result in regression of the symptoms. Discontinuation of the treatment results in immediate diminution of hemoglobin in the blood and aggravation of the symptoms, which sometimes do not regress. Once regression of the symptoms or improvement of the blood takes place, injections of liver extract corresponding to 5,000 Gm of liver should be given once a week or every other week. The frequency of the injections is determined by controlling the amount of hemoglobin in the blood by weekly blood examinations in order to maintain hemoglobin at not lower than 100 for men and 90 for women. The treatment in these cases should be given without interruption for a period varying from fourteen months to three years. Large doses of iron and physical reeducation are resorted to as complementary treatments. The author discusses the economic aspect of liver treatment.

Discontinuation of the treatment because of the patient's financial status is the main cause of the neurologic complications. It is advisable to establish centers, supported by the government or the community, for free administration of liver treatment to those unable to pay for it. The expenses of these centers will be small compared to those of supporting invalids from the disease. Two cases of the typical and atypical forms, respectively, are reported by the author.

Policlinico, Rome

43: 407-478 (Sept. 15) 1936 Surgical Section

- *The Sodium Salt of *n*-Methyl Cyclohexenyl Methyl Barbituric Acid and Tetanus Antiserum in Experimental Tetanus S Caminiti—p. 407
- Mens Agitat Molem Psychic Influences on Etiopathogenesis of Gastric Ulcer B Schiassi—p. 425
- Adamantinoma of Lower Jaw Cases G Selvaggi—p. 454

Experimental Tetanus—Caminiti says that hyperthermia induced by pyretogenic substances, fails in treating experimental tetanus. Conflicting opinions are reported in the literature on the therapeutic value of several forms of anesthesia. The author made experiments on rabbits and found that ethyl chloride, chloroform and ether anesthesia fail to retard fixation of the toxin on the nervous tissues, to free the toxin from the tissues and to make it liable to be neutralized by the antitoxin in the blood. Rabbits treated with the anesthetics died early in the course of experiments. The sodium salt of *n*-methyl-cyclohexenyl-methyl barbituric acid associated with tetanus antiserum in large doses (1,500 Rosenau units for each injection given intramuscularly) gave satisfactory results. The greater number of rabbits that received the combined treatment thirty-six and forty hours after inoculation of the toxin and eighteen and twenty-four hours after onset of contractures survived the disease. The action of the treatment seems to be due to sedative and antispastic properties of the sodium salt of *n*-methyl-cyclohexenyl-methyl barbituric acid by which the excitability of the nervous tissues diminishes and the tissues become permeable to the entrance of antitoxins. The development of the disease is favorably modified, especially by great attenuation of the nervous symptoms of the clonic-tonic type. The results of the experiments according to the author, indicate the advisability of the use of the combined treatment in tetanus in human beings for evaluation of clinical results.

Rivista di Chirurgia, Naples

2 385-436 (Aug.) 1936

- Results of Experimental Cholecystectomy on Structure of Extrahepatic Bile Ducts M Barbiroli—p. 385
- Painful Ankylosing Spondylitis Unilateral Recovery Through Parathyroidectomy G Greco—p. 391
- *Primary Giant Cell Tumors of Patella Case. E Sorge—p. 399

Primary Giant Cell Tumors of Patella—According to Sorge, the number of cases of primary giant cell tumors of the patella reported in the literature is sixteen, including his own. He reviews the operation performed in each case and the results reported. In his case he resorted to rotulectomy followed by reconstruction of the extensor femoris muscles and plastic correction of the tendon of the quadriceps by means of a flap, previously prepared. The operation was satisfactory as to cosmetic and functional results (complete extension of the leg and active flexion of the knee joint of about 130 degrees). Functional improvement is expected from time and physical exercise.

Arch Arg Enf d. Ap Dig y Nutri, Buenos Aires

11 555-710 (Aug-Sept.) 1936 Partial Index

- *Magnesium Sulfate in Vomiting of Pulmonary Tuberculosis A A. Raimondi A. Sangiovanni and L. E. Camponovo—p. 555
- Roentgen Diagnosis of Incomplete Chronic Obstruction of Jejunum and Ileum P A. Maissa—p. 566
- *Influence of Bile and Bile Salts on Vaginal and Intestinal Trichomonas Ida Fischer—p. 660
- Grave Hemorrhagic Colitis A. Lodice—p. 668
- Etiology of Intestinal Toxemia H J D. Amato—p. 672

Treatment of Vomiting in Pulmonary Tuberculosis—Raimondi and his collaborators find magnesium sulfate efficacious in the treatment of alimentary vomiting not originated in any pathologic gastric condition and complicating pulmonary tuberculosis. It is advisable to resort to the treatment as soon

as vomiting begins, not only to prevent denutrition and psychic reactions of the patient but also to improve his general condition. The treatment consists in subcutaneous or intramuscular injections of from 3 to 5 cc of a 12 per cent solution of magnesium sulfate to which a 1 per cent solution of procaine hydrochloride or 0.02 Gm of paraphenolsulfonate of ethylamino benzoate for each 5 cc of the solution is added. Two daily injections are given, each of which is administered half an hour before meals. Vomiting is controlled in all cases after the first few injections. It is advisable, however, to give the treatment for ten days to consolidate the satisfactory results and to repeat it at any time if vomiting reappears. The treatment may be used in pregnant tuberculous women, it does not interfere with the digestive functions and is better than other medical treatments that are now used for the condition.

Influence of Bile Salts on Vaginal and Intestinal Trichomonas—Fischer experimented in vitro and found that bile, in normal condition, develops a proteolytic action on vaginal and intestinal Trichomonas. The toxic action of bile depends on its concentration, which in turn depends on the normal function of the liver. Greatly diluted bile favors the development of Trichomonas. Sodium cholate, glycocholate and taurocholate are parasitocides for Trichomonas.

Crónica Médica, Lima, Peru

53 249-280 (July) 1936

- *Treatment of Erysipelas by Ultraviolet Rays R. F. Desmaison—p. 249
- Accidents and Complications of Phrenicectomy O. Herceles García—p. 257
- Clinical Forms of Dangerous Psychic Criminologic Personal Conditions Susana Solano—p. 265
- Complete Impotence from Tabes Dorsalis Case. L. Avendaño and C. A. Bambarén—p. 269

Treatment of Erysipelas by Ultraviolet Irradiations—Desmaison resorted to ultraviolet irradiations in treating erysipelas of the medical or surgical type. Care should be taken that the eyes of both the patient and the roentgenologist are protected by glasses. He prefers Hanan's mercury vapor lamp because of the regularity of the radiations emitted. The lamp should be focused at a distance of 50 cm. so that the beam touches the skin obliquely or horizontally in relation to the position of the patient without bringing him directly under the lamp but beside it. The irradiation covers not only the involved area but the surrounding zone of apparently normal skin as well. Treatments are given daily or every other day with a duration of five minutes for the first and ten minutes for the following irradiations. The complete treatment consists of from three to six irradiations. It gives immediate sedation of the local and general phenomena and complete control of the disease, generally after the third irradiation and rarely after the fifth or sixth. The efficacy of the treatment is the same in patients suffering from erysipelas, but otherwise normal, as in those with diminished organic resistances and physiologic insufficiency. Pulmonary tuberculosis, myocarditis, heart diseases in decompensation and certain dermatitis of the vesicular type are contraindications of the treatment.

Semana Médica, Buenos Aires

43: 757-824 (Sept. 17) 1936 Partial Index

- Surgery of Lumbar Sympathetic J. Arce and A. S. Introzzi—p. 766
- Abscess of Lung Rare Complications Case C. Patiño Mayer E. Pitagala and A. Montenegro—p. 769
- Transfusion of Preserved Blood A. O. Tachella Costa—p. 783
- Antityphoid Vaccination in Course of Epidemics Results P. J. Lanzani—p. 790
- Silent Spontaneous Pneumoperitoneum in Pulmonary Tuberculosis Complicated by Duodenal Ulcer Case. S. Gertzenstein and N. Moguilner—p. 803

Transfusion of Preserved Blood—Tachella Costa states that blood from living persons preserved at a temperature of 4°C keeps its therapeutic properties for eight days when preserved in an isotonic citrated solution and for several weeks when preserved in a dextrose solution. When compared with direct transfusion from donor to patient, preserved blood transfusion has the following advantages: same efficacy, more exact serologic control of the blood in relation to possible contamination and blood grouping, easier technique, lower cost and opportune availability. These advantages prove the advisability of

using preserved blood. Surgical clinics and emergency departments, even those located in small communities, should have a department for blood transfusion with a supply of preserved blood available at all times. The author does not consider transfusion of preserved blood from cadavers, since it is difficult to obtain cadavers of normal persons who have died suddenly and to be sure of the preservation of the cadaver before taking the blood. Another great objection is the repugnance of patients to be treated with blood of cadavers.

Medizinische Klinik, Berlin

32 993 1028 (July 24) 1936 Partial Index

- Sport and Nutrition C von Noorden—p 993
Allergy and Disease T Brugsch and A Sylla—p 996
Changes in Thyroid Tissue Under Iodine Treatment II Willer—p 999
Pancreatitis in Diseases of Bile Tract II Horstner—p 1003
Significance of Roentgen Examination of Gastric Mucous Membrane G Velde—p 1006
Histidine Treatment in Disorders Accompanied by Ulceration Particularly in Colitis Ulcerosa and Bronchiectasis II Kahler and H Duregger—p 1009
Intravenous Galactose Tolerance Test K Hitzemberger and E Fantl—p 1017

Histidine Treatment in Ulcerating Disorders—Kahler and Duregger were able to corroborate the favorable action of histidine on gastric and duodenal ulcers in forty cases. They employed a sterile 4 per cent isotonic solution of histidine monohydrochloride, using ampules of 5 cc each for intramuscular injections. In the majority of the cases they observed disappearance of the pains after the third or fourth injection and at the end of the histidine treatment (from eighteen to twenty five injections) they nearly always observed that the objective ulcer signs subsided (muscular stiffness, pressure points and occult hemorrhages). The roentgenogram likewise revealed improvement. It is especially noteworthy that, in contradistinction to other internal methods of ulcer treatment, histidine therapy is effective also if no particularly strict diet is adhered to. In four cases relapses appeared after four and eight months respectively but renewed treatment with histidine was again successful. The authors decided to try this treatment also in other disorders that are accompanied by ulcer formation. They found that in ulcerative colitis histidine injections result in rapid improvement, which can be proved rectoscopically. In large pulmonary abscesses histidine treatment was ineffective, but in small pulmonary abscesses improvements were observed. Many cases of bronchiectasis responded favorably to histidine treatment in that the quantity of the sputum and its bad odor were nearly always reduced. The authors think that the fact that histidine is effective in ulcerative processes of various organs indicates that it exerts a direct influence on the chemistry of the diseased tissues.

Intravenous Galactose Tolerance Test—Hitzemberger and Fantl point out that, in oral tolerance tests with 40 Gm of galactose, cases are frequently detected in which no galactosuria results. This so-called agalactosuria was considered by some authors as a differential diagnostic sign of pernicious anemia. It was soon found, however, that this sign appeared also in other forms of anemia and even in disorders without anemia. Further, the authors mention investigators who assumed that disturbances in the intestinal absorption or in the renal function might be a cause of the agalactosuria. They point out that in the latter cases there should be a high galactosmia. They observed a patient with parenchymatous icterus of such severity that acute atrophy of the liver had to be suspected. Repeated oral galactose tolerance tests (40 Gm of galactose in 400 cc. of tea) disclosed complete agalactosuria. Although the patient was free from noteworthy intestinal disturbances a defective resorption was suspected as the cause of the agalactosuria, for renal disorders were likewise absent. In order to detect the possible disturbance in the intestinal resorption, the authors made an intravenous injection of galactose and at once observed a severe galactosuria. Following preliminary tests they found that 40 Gm of galactose must be administered intravenously in order to obtain practical results. They now make the intravenous galactose tolerance test with 40 Gm. of galactose in the form of a 40 per cent solution.

They stress that with this test the always doubtful component of intestinal absorption can be eliminated. They found that normal subjects eliminate in the urine up to 5 Gm of the intravenously administered 40 Gm of galactose. Patients with parenchymatous icterus or with pernicious anemia who show agalactosuria after an oral tolerance test show a typical galactosuria following intravenous administration. The authors conclude from this that the agalactosuria after the oral test is caused by deficient intestinal resorption. In case of renal lesions, the galactosuria is low even after intravenous galactose tolerance tests.

Zentralblatt für Gynäkologie, Leipzig

60 1633 1680 (July 11) 1936

- Abdominal Cesarean Operation Its Present and Future E. Puppel—p 1634
Results of Treatment Particularly of Radium Therapy in Carcinoma of Uterine Cervix W P Plate—p 1638
Chorion Epithelioma Case L G Steigelmann—p 1639
*Substitute for Blood in Profuse Abdominal Hemorrhages O Hajek—p 1613
Interstitial Tubal Rupture Case R Leupold—p 1652

Substitute for Blood in Abdominal Hemorrhages—Hajek points out that the reinfusion of the blood which accumulates in the abdomen in ruptured tubal pregnancy was first recommended by Thiess. The advantages of this reinfusion over transfusion were so pronounced that the method soon found wide acceptance. To be sure, there also were some failures but these were usually traced to some defect in the technic and efforts were made to improve it. The author reviews several methods that have been suggested for the preparation of the blood and then shows that the reinfusion itself has been done with different apparatus. After discussing some of the complications that have developed in connection with the reinfusion, he directs attention to the technic suggested by Knaus who aimed at reintroducing the blood as nearly as possible in its physiologic condition. Knaus employs neither defibrination nor dilution with sodium chloride, Ringer's solution or sodium citrate. By dispensing with these procedures he not only prevented impairment of the blood but also simplified the method considerably. Following opening of the abdomen, Knaus takes up the blood into a sterilized apparatus consisting of three parts, the upper being a sieve, the middle the blood container and the lower containing water at 40 C to keep the blood at the proper temperature. The sieve separates the fluid blood from the coagulated blood. The fluid blood thus obtained is introduced into the vein of the arm as in case of blood transfusion from man to man. The author says that no further complications have occurred since this method of reinfusion was introduced at his clinic.

Problemy Tuberkuleza, Moscow

Pp 915 1044 (No 7) 1936 Partial Index

- Growth Morphology of Lymphatic Nodules in Relation to Morphology of Tuberculosis L O Vishnevetskaya—p 917
Vegetative-Nervous Tonus and Functional Capacity of Cardiovascular System in Tuberculous Patients T D Kan and Ya M Brailovskiy—p 948
State of Vegetative Nervous System in Children with Pulmonary Tuberculosis M P Pokhitonova—p 959
*Indications for Operation of Jacobus P N Altschuler—p 965
*Blood Plasma Transfusion for Arrest of Pulmonary Hemorrhage. O S Kazarnovskaya and V J Mordvinkina—p 973
Fatal Pulmonary Hemorrhages in Tuberculosis of Children I M Factorovich—p 977

Thoracoscopy with Severance of Adhesions (Jacobus' Operation)—Altschuler analyzes the results of 165 thoracoscopies with or without cutting of the adhesions performed in the last three years in the surgical division of the Central Tuberculosis Institute. The majority (ninety-nine) of the patients presented a bilateral disseminated or fibrous cavernous process. Only one third (fifty-two) presented a unilateral involvement. The operation was performed in 117 cases because of cicatrices which prevented the collapse of a cavity and because of the presence of tubercle bacilli in the sputum. It was performed in sixteen cases because of adhesions that were deforming the collapsed lung and because of the presence of tubercle bacilli in the sputum despite the fact that the existence of a pleural cavity could not be demonstrated either clinically or roentgenologically. Adhesions were the sole indication for operation in fifteen cases. The adhesions were responsible in

those cases for the continuance of toxic symptoms such as temperature and moderate blood spitting after reinflation. In two cases the operation was performed for a persisting exudative pleuritis. The operation of thoracoscopy with cutting of adhesions gave positive mechanical and clinical results in 64 per cent. It brought about obliteration of the pleural cavity, disappearance of tubercle bacilli from the sputum and toxic symptoms. Reinflation had to be done, but the patients felt well and were able to work. Collapse of the lung was improved in thirteen. In 3 per cent of the patients a supplementary phrenico-pleuresis had to be done to obtain a satisfactory collapse. The author considers the following absolute indications for thoracoscopy: 1 The presence of cicatrices that deform a cavity and tubercle bacilli in the sputum. 2 When in the absence of a demonstrable pleural cavity, there exist adhesions that deform the collapsed lung and when tubercle bacilli are present in the sputum. 3 When, in the absence of tubercle bacilli in the sputum and a demonstrable pleural cavity, toxic symptoms persist that can be explained on the basis of trauma of tuberculous foci resulting from cicatrizing adhesions. 4 Persistent or recurring pneumopleuritis in the quiescent period. In such cases adhesions frequently traumatize the pleura and interfere with the subsidence of the inflammatory process. 5 Failure on the part of the pleural cavity to become obliterated even if roentgenograms do not demonstrate the presence of adhesions. Among the relative indications he mentions: (1) the presence of cicatrices in an otherwise satisfactory artificial pneumothorax, (2) protracted pneumopleuritis in the quiescent period without roentgenologically demonstrable adhesions, (3) certain cases of spontaneous pneumothorax caused by the rupture of an adhesion close to the visceral pleura (thoracoscopy here has a diagnostic as well as a therapeutic value), (4) the cutting of the adhesion, which permits the lung to collapse and the perforation to close, and (5) before an induction of an oleothorax in order to demonstrate the condition of the pleura. Hyperemic pleura points to activity of the inflammatory process and therefore to continuation of exudation in spite of introduction of fat (oleothorax).

Blood Plasma Transfusion for Arrest of Pulmonary Hemorrhage—Kazarnovskaya and Mordvinkina report ninety-six transfusions with blood plasma in fifty-three patients. Thirty-three of the patients had a persistent profuse bleeding, which had resisted the various hemostatic measures such as administration of calcium chloride, autohemotherapy and horse serum. The amount of blood plasma infused at one time amounted to from 20 to 40 cc. Hemorrhage was arrested after one transfusion in thirty-one cases, after two in nine cases and after three in eleven. The method failed in two instances. It was thus effective in 96 per cent. The plasma was secured from the Leningrad Institute for Blood Transfusion. It is prepared from donors of groups A and B. It does not contain agglutinins and can be given without regard for the blood group of the recipient. It does not produce anaphylactic reactions on repeated injections. It differs from serum in that it does not contain fibrinogen. The advantages of the method claimed by the authors are the small dose required, the rapidity of action, the few general reactions and total absence of focal reaction. Infusion of blood plasma has the effect of increasing blood coagulability, the lowering of which constitutes one of the most important factors in the complicated mechanism of pulmonary hemorrhage.

Norsk Magasin for Lægevidenskapen, Oslo

97 897 1000 (Sept.) 1936

- *Reticulo-Endothelioses and Reticulo-Endotheliomas in Lymph Nodes. F. Harbitz.—p. 897
- Nonparasitic Cyst in Spleen. Case. K. Schanke.—p. 912
- Granulosa Tumors. A. Grevle.—p. 918
- *Stenosis of Aortic Isthmus. Two Cases. E. Blegen.—p. 927
- Internal Derangement of Knee. P. E. Giersten.—p. 938
- Roentgenologic and Combined Roentgenologic Surgical Treatment of Cancer of Tongue. Three-Year Results. R. B. Engelstad.—p. 946
- *Ischiopubic Osteochondritis. J. Torgersen.—p. 951
- *Nervous Disorder with Fatal Outcome After Spinal Anesthesia with Symptom Free Interval of Four Weeks. Case. D. Elstad.—p. 959

Reticulo-Endotheliomas in Lymph Nodes—Harbitz says that there are conditions in the lymph nodes originating from the reticulum which are not related to tuberculosis or to lymphogranulomatosis and its atypical forms or to other known

inflammations or tumors. Diagnosis can be made only by the microscopic structure and by exclusion. These disorders of the lymph nodes are partly hyperplastic processes at the start but show transitions to malignant tumors in their later development. Temporarily they may be called reticulosarcomas or reticulo-endotheliosarcomas if histologically agreeing with tumors. The prognosis is doubtful, they often recur after extirpation and appear rather resistant to irradiation in that recurrence is frequent after this treatment. These conditions, the author says, seem to be of considerable importance and should be distinguished as a separate group. He gives a classification and reports six cases. The first three represent hyperplasia of the reticulo-endothelium, one in a boy aged 14, with general trichophytosis and progressive enlargement of the lymph nodes, the second in a woman aged 27, with probably benign enlargement of the lymph nodes in the neck, and the third in a woman aged 31, with chronic enlargement of the lymph nodes in the neck. The last three cases represent reticulo-endotheliomas and reticulosarcomas, the first in a woman, aged 62, with progressive disease of the lymph nodes of the breast and infiltration in its papilla, with death after three years, the second in a man, aged 46, with tumor in the cervical glands, fatal after two years, and the third, in a man aged 29 with tumor in the lymph nodes of the neck and later general spreading, fatal after fifteen months.

Stenosis of Aortic Isthmus—In Blegen's two patients a man aged 36 and a woman aged 34, there were typical signs of the lesion. The first patient, who died from hemorrhagic diathesis, showed definite signs of another congenital lesion in Gee-Herter's disease. Examinations revealed blood calcium as low as 3.4 mg per hundred cubic centimeters, whereas six months earlier it had been 7.8 mg. He says that, although hypothermia is not excluded the grave hemorrhages are ascribed to the low blood calcium. The diagnosis of aortic coarctation was verified on necropsy. No anatomic substrate for Gee-Herter's disease was found. The atrophic spleen (weight, 20 Gm) without signs of normal structure may be considered related to the intestinal disorder or an independent anomaly and the presence of abundant Jolly's bodies in the red blood corpuscles may be connected with the spleen.

Ischiopubic Osteochondritis—Torgersen reports two cases in children aged 8 and 9 years. Roentgen examinations show a nut-sized swelling of the synchondrosis sclerotic at the border and vacuolic in the center. Ischiopubic osteochondritis is a disorder of children in the synchondrosis between the lower branch of the pubis and that of the ischium. It was singled out as an entity by Van Neck and studied more closely by Heeren and has been described only once before in the Scandinavian literature. While the disorder is relatively rare it is common enough to be considered in differential diagnosis of disturbances in the pelvis and when clinicians and roentgenologists become more familiar with it, it will be diagnosed more often. The symptoms are pain in the inguinal region on walking. The roentgenograms of ischiopubic osteochondritis and of osteomyelitis are similar but in osteomyelitis there is no sclerotic border zone. All roentgenograms in ischiopubic osteochondritis show that the two bones have begun to touch, in some cases ossification is strikingly unsymmetrical. The author thinks that the disorder may be caused by a mechanical factor. It probably predisposes to secondary infection when ossification occurs the pain ceases and the danger of secondary infection is past. The prognosis is good. Treatment may be limited to guarding the patient against overexertion and to correction of possible static defects.

Fatal Nervous Disorder After Spinal Anesthesia—Elstad states that four weeks after appendectomy done under spinal anesthesia in a man aged 42 marked neuralgia-like pains suddenly began in the right leg partly also in the right arm, accompanied by violent headache and double vision and colic like pains with vomiting. The pain soon abated but paralysis of the right upper and lower extremity and the right facialis and abducens nerves developed increasing in two days to complete paralysis of the right side together with slight paralysis of the left lower extremity. Death was due to respiratory paralysis. The author says that while the spinal anesthesia might seem the probable cause of the paralysis, the long latent period before appearance of the symptoms is unexplained.

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THE PRESENT STATUS OF RESEARCH AND TEACHING IN PHARMACOLOGY

NORMAN A. DAVID, M D

CINCINNATI
AND

GEORGE A. EMERSON, PH D

MORGANTOWN, W VA.

The conspicuous role played by pharmacology in the development of modern medicine has established this comparative newcomer among the medical sciences as an outstanding and independent field for scientific endeavor. Through the numerous discoveries and valuable therapeutic contributions pharmacology has given medicine, this study has demonstrated its ability to work shoulder to shoulder with its older, fellow sciences and today it fulfils in a highly creditable manner its many important duties to research and medical education. Compared to past research achievements in this field, even greater gains for the future are promised by the vigorous activity and interest displayed in the pursuit of present pharmacologic investigations. In medical education also pharmacology is advancing to a recognized position as one of the major subjects of the curriculum. Scarcely a generation ago it was included as a very minor part of the course in materia medica, today it dominates the field of drug studies.

Few medical sciences provide as many excellent opportunities for significant and important future contributions to scientific medicine as does pharmacology. It is therefore desirable that certain problems inherent in the subject be examined critically and met frankly, to assure further advance of medical pharmacology and to forestall a reaction leading to subordination of the science to its former minor place in the medical curriculum. At present, pharmacology is advancing rapidly, but even now there are again evidences of drug nihilism¹ which must ultimately react against it. Thus, it is necessary to take cognizance of the present state of research and teaching of therapeutics in any discussion of pharmacology. Our purpose is to record what we believe to be the views of a number of younger men in pharmacology, bringing to attention certain serious problems that threaten the maintenance of the present high status of pharmacology.

RESEARCH IN PHARMACOLOGY

Current interest in pharmacologic investigation is keen both in research institutions and in commercial

laboratories. A general movement is under way, particularly among pharmaceutical concerns, to devote as much money and time as practicable to the scientific development of new and better medicinal agents. Recently several large and well equipped laboratories, dedicated almost entirely to pharmacologic research, have been completed. In medical schools greater opportunity for study is continually being made possible through the growth and strengthening of present departments by personnel and budget increases. The recent establishment of independent departments of pharmacology in two of the score or more schools that have continued to place this subject under the control of another department has been a definite step forward. Numerous financial gifts and substantial research grants, while small compared to the monetary benefits some of the other medical sciences receive, have materially increased the number of workers who are devoting their time and energy to pharmacology. Due credit must also be given to those pharmaceutical concerns which have furthered the cause of pharmacology through the many fellowships and liberal grants they have bestowed on our medical schools.

In line with these increased opportunities for pharmacologic research, the development of cooperative efforts in which the pharmacologist plays a dominant rôle has been a healthy symptom of the growth of modern pharmacology. Since the practical demonstrations of the worth of such cooperative efforts by Ehrlich and later by Loevenhart, there has been little question of the value of such work in facilitating advances in pharmacologic knowledge and, more importantly, in therapeutics. An outstanding example of cooperation is that now in progress in various laboratories and government institutions which have taken on themselves responsibility for dealing with the problems of morphine addiction.² Both authors received their introductory research training in less pretentious but satisfactory cooperative studies of the chemotherapy of amebiasis³ and leprosy, in which a number of commercial pharmaceutical laboratories, university departments, hospitals, leprosariums, a tropical medicine research institute and a state prison were included. Since we are convinced that the success attained even in such minor examples was far above that which could have been made by any single laboratory working independently, our plea is for expansion of combined endeavor with more laboratories deliberately entering on such a course. A particularly important advantage is the possibility of the pharmacologist so seeing the problem through to its therapeutic application, which is often difficult in independent work.

From the Departments of Pharmacology, University of West Virginia School of Medicine and the University of Cincinnati College of Medicine. Read before the Section on Pharmacology and Therapeutics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.
1 David N. A. The Recent Graduate and Drug Nihilism J. A. M. A. 106 405 (Feb. 1) 1936.

2 Edmunds C. W. Eddy N. B., and Small L. F. Studies on Morphine Addiction Problem J. A. M. A. 103 1417 (Nov. 10) 1934.
3 Leake C. D. Chemotherapy of Amebiasis J. A. M. A. 98 195 (Jan. 16) 1932.

A closely allied problem is that of the varying quality of pharmacologic research. Since pharmacologists are primarily individuals, it is to be expected that the individual approach to a problem will differ in each case. Too often this results in an imbalance—either intense, difficult work is expended on a very minor action of a drug, or else therapeutic application is made of a drug that has not been adequately investigated as to its major side-actions. The need for some standard pharmacologic analysis of new agents is becoming recognized generally, but opinions as to exact methods vary widely. Certainly pharmacology is in a position to formulate at least the main points of investigation of new compounds before these agents are tested on human beings.

The aims of pharmacology are sometimes misunderstood by the profession, because the more dramatic advances are concerned with the introduction of new therapeutic agents. There are no ideal drugs today, or none that could not conceivably be improved on. Past accomplishments in the improvement of therapeutics have been made chiefly through the use of new agents, but equally important is the phase of pharmacology which deals with the actions of known, older drugs and which leads to the discarding of ineffective agents while pointing the way to the rational development of new drugs.⁴ Thus, while the aim of medical pharmacology must be the determination of the action of pure chemicals with regard to their possible therapeutic application, pure pharmacology, though not dealing directly with therapeutics, is of such importance to the advance of medical pharmacology that it should not be unsupported by the medical profession and the medical schools.

TEACHING OF PHARMACOLOGY

Part of the current confusion with regard to the present status of teaching in pharmacology, evidenced by the symposium of the Association of American Medical Colleges,⁵ is due to an inability or reluctance to differentiate properly between pharmacology and therapeutics. Advance in the preclinical sciences has been general but in biochemistry and physiology has been adequately met by relatively minor teaching adjustments, while in pharmacology the medical course has necessarily been entirely revised. Whereas, in the past, a large part of a course in pharmacology was devoted to materia medica and therapeutics because of lack of knowledge of basic pharmacology, this knowledge is now more than sufficient to fill the short period in which the student is exposed to pharmacology. In many instances this has resulted in almost complete ignoring of all but the major therapeutic facts, in most cases, much less therapeutics is now taught than formerly. The important development, which has not been universally appreciated, is that pharmacology is no longer synonymous with therapeutics.

The purpose of modern pharmacology in the medical curriculum is to widen the student's knowledge of biochemistry and physiology and so prepare him for a rational approach to therapeutics. If this ideal is fully served, students will learn more sound therapeutics than if they are subjected for an equivalent period to superficial therapeutic aspects of drugs, the applications of which can never be understood completely with-

out explanation of the basic pharmacology involved. Unfortunately, the course in pharmacology comes at a time when the student "begins to feel like a doctor" and is resistant to any serious mental work which does not have immediate practical application. At the same time, the student needs "sufficient information of a pharmacologic character to enable him to employ safely, sanely and thoroughly, not many, but a few agents in the treatment of abnormal functional and structural states" (MacNider⁶) and should not be impatient with studying such material. At West Virginia, students are told, "you will be learning practical applications of drugs for the rest of your career. Now is your only formal opportunity to learn why and how drugs act." However, through lack of interest or inspiration, Dr. Hayman's⁷ statement that "the pharmacological knowledge of too many students seems confined to linking a certain disease with a particular drug, whose proper dose has been jotted down in a notebook carefully carried in his pocket" still remains generally true everywhere. His next words, "That is not pharmacology," seem to have no appeal to our future physicians.

One rational remedy for both horns of the dilemma—the lack of interest of students in pharmacology per se and the need for this information to be imparted to them as an introduction to modern therapeutics—is to provide adequate instruction in therapeutics as a separate course during the third or fourth year, rather than forcing the student to pick it up piecemeal from a dozen courses, as at present. Nor should the student be expected to have a perfect knowledge of modern therapeutics after completing what is, after all, only a transitional course from his preclinical work. As Dr. Lamson⁸ so well expresses it, "Medicine, besides being a science, is an art and the giving of medicines in the best form and amount, and at the proper intervals, can only be taught by those who are in daily contact with disease. It is therefore wrong to expect the student to appear for the first time in the wards with a perfect understanding of how to treat patients, the art of which he will learn only after years of experience. The teaching of the action of drugs in disease as well as health [is] not necessarily therapeutics."

Viewed in this light, there is ideally no more reason why therapeutics should be taught in pharmacology than in biochemistry, anatomy or physiology. Yet because of the practical limitation that few schools offer adequate courses in therapeutics at the time it could best be taught,⁷ some compromise must be made with the present conditions, which, we have seen, are definitely a holdover from past practice. That this practice was good at the time is no excuse for resisting improvement now. Each teacher must make his own compromise, but one in which one of us took part has proved valuable. This experiment, now closed, was conducted in the Pharmacological Laboratory of West Virginia University for ten years⁸ and involved the study of human reactions to drugs by the students, in addition to the classic animal experiments. The details of this method and its results cannot be suitably given here but will appear as a separate report by one of us (N. A. D.).

If pharmacology is to develop fully in its rightful place as a major preclinical subject, it is necessary that

4 Puckner, W. A. and Leech, P. N. The Introduction of New Drugs. *J. A. M. A.* 93: 1627 (Nov. 23) 1929. Leake, C. D. The Pharmacologic Evaluation of New Drugs. *ibid.* p. 1632.
5 DeGraff, A. C. Teaching of Therapeutics. *J. A. M. Coll.* 11: 65 (March) 1936. MacNider, W. deB. The Teaching of Pharmacology from the Standpoint of the Examiner. *ibid.* p. 70. Hayman, J. M. Jr. The Teaching of Pharmacology from the Standpoint of the Clinician. *ibid.* p. 77. Edmund, C. W. The Teaching of Pharmacology. *ibid.* p. 83.

6 Lamson, P. D. Methods and Problems of Medical Education. 13th series. New York, Rockefeller Foundation, 1929.

7 Osborne, O. T. A Medical School Curriculum Leading to Rational Therapy Recommended by the American Therapeutic Society. *New York M. J.* 117: 340 (March 21) 1923.

8 Bonar, M. L. The Teaching of Pharmacology. *J. A. M. Coll.* 4: 313 (Oct.) 1929.

specially trained men be put in charge of didactic work in the subject. We sincerely hope that the day when any man with simply a medical training was considered eligible to teach pharmacology is past. Certainly no man without sufficient ability or interest in the subject to become a member of the Pharmacological Society should teach pharmacology. It is only fair that the same standards be set for pharmacology as are in force for physiology and biochemistry in our medical schools, and it is necessary for further advance in the subject that such standards be strictly adhered to. Equally rigorous standards must be set to assure the competence of men teaching therapeutics, and it is apparent that it would take an unusually gifted person to be able to teach both adequately.

The chief reason for the present necessity of a thorough course in basic pharmacology before the student is properly qualified for therapeutics is, of course, the great change in the nature of therapeutic practice brought about by the constant introduction of valuable, dangerous or sometimes worthless new therapeutic agents. In order that the student may be fit to judge their actions and worth, it is now necessary to emphasize the chemical aspects of pharmacology a bit more than has been customary with the older pharmacologists. In this regard, the splendid work of the Council on Pharmacy and Chemistry has served admirably to prevent a deplorable condition. But just as proper pharmacologic training should fit the student to make his own therapeutic prejudices independently of the therapeutic prejudices of his authorities, so it should fit him to make, at least grossly, conclusions similar to those of the Council in regard to the background of newly introduced therapeutic agents.

Overemphasis of chemical aspects of pharmacology is as reprehensible as Dr MacNider⁵ has shown it to be. A method that nicely avoids this, almost by definition, is to limit chemical discussion to the relation between the physiologic action and the chemical constitution of the drug, touching only on well substantiated examples of the application of the various laws involved. Such "biochemorphology" has shown itself to be a powerful weapon both in research and in teaching, although its full value cannot be appreciated until more data are available on many important points of biochemorphic relationships.⁶ Its function at present, in didactic work, is to show the student by dramatic examples that pharmacology is the study neither of chemical properties of drugs nor of purely physiologic actions, but the interrelation of the two. It permits an assimilation by the student of an orderly series of facts and aids in placing pharmacology as a discipline on a scientific par with physiology and biochemistry.

Finally, the laboratory course in pharmacology has been criticized constructively by authors of papers in the symposium mentioned.⁶ It is necessary that cognizance be taken of the criticisms of students as well. It is our belief that the laboratory course should serve only to supplement lecture material. In it the student learns methods of pharmacologic research without attempting to verify all pharmacologic knowledge or establish new facts. A major part of the experimental work, particularly of the more tedious and difficult setups, may well be shown by demonstrations. All experiments should be as simple and illustrative as possible, and the occurrence of unusual reactions thor-

oughly explained, as Dr MacNider⁵ points out. Emphasis must be placed on drugs useful in therapy or on closely allied drugs which illustrate certain phases of their action, rather than on beautiful, tenuous explanations of complex physiologic reactions which have no interest for medicine and may never have. Physiology is best taught in the physiologic laboratory, and the pharmacologist does not begrudge the physiologic use of drugs as molecular dissecting knives to illustrate physiologic principles—in physiology. Unless such drugs have important therapeutic applications, they have little place in the pharmacologic teaching laboratory. Just as chemical aspects of pharmacology should never be overemphasized, so only the pertinent physiologic information should be given in the student laboratory.

CONCLUSION

The encouraging results following the detailed analysis of the ailments of pharmacology at the last annual meeting of the Association of American Medical Colleges give hope that pharmacologists at least are awake to the present status of their specialty. For complete success, the medical profession as a whole can aid by being aware of the potential dangers in the rapid advance of modern pharmacology, particularly in its reaction on methods of teaching. It is our hope that the new generation of pharmacologists will live up to the present responsibilities of advancing the science as well as those before us have done and are doing.

ABSTRACT OF DISCUSSION

DR. H. B. HAAG, Richmond, Va. Pharmacology should be in a key position in the medical curriculum, apparently, however, some medical executives are not cognizant of this enviable position of pharmacology and have relegated the teaching of pharmacology to physiologists, biochemists and even sometimes pharmacists. This negative attitude does much to discourage young men from entering pharmacology. It does much to make good men leave pharmacology. In view of the position of pharmacology in the medical curriculum, it is unfortunate that pharmacologists have apparently so little interest in clinical medicine. This is certainly exemplified here this morning and in the meetings in general, there being scarcely more than a half dozen pharmacologists attending this annual meeting of the American Medical Association. Whereas a primary function of pharmacology is to deal with fundamentals, I do think there is a lack of clinical application which might well be considered. A student studies the action of drugs on normal tissue, on normal animals, on normal individuals, as the authors have pointed out. It seems to me that these studies might well be extended to the third and fourth years, either as applied pharmacology or as therapeutics, either under the department of pharmacology or under the department of medicine. Here it could be extended to a study of the effect of drugs on the sick. This is an excellent place for the practical teaching of prescription writing, for in my experience it is quite hopeless to teach it purely didactically. I think that endocrines should be considered more extensively. We should consider the vitamin preparations, how they are given, how they are available, and their method of assay. The significance of bio-assays in general and their clinical application should be considered. The course on anesthesia should be extended by a cooperative arrangement with the department of surgery or the department of anesthesia. By a cooperative effort with clinical men the use of the old apothecary system could at once be done away with and the more scientific metric system substituted for it immediately. We have drifted too far away from *materna medica* and incompatibilities. Ignorance of these two makes the students when they graduate easy prey for the detail man.

DR. CHARLES W. GREENE, Columbia, Mo. There were no pharmacologic teaching laboratories as late as 1900 offering required courses as a part of the medical curriculum. We

⁵ Knoefel, P. K., Lonergan, Lester and Leake, C. D. Biochem. opic Aspects of Paraldehyde and Certain Acetals. *Proc. Soc. Exper. Biol. & Med.* 28: 730 (March) 1932.

were then in the active throes of expanding medical instruction into a four year curriculum, with ever increasing premedical training requirements. Physiologic, biochemical and ultimately pharmacologic laboratories were then in the process of organization and development as required experience in the preparation for medicine. In 1900 I established at the University of Missouri the first teaching pharmacologic laboratory. It is true, as the authors state, that in this first decade of the present century courses in therapeutics and in materia medica along the old-time lines of didactic development were in the field. The establishment of pharmacologic laboratories in a way had to compete with and, in a degree, displace time allotted to these courses. In the University of Missouri laboratory of pharmacology the basic concept was that pharmacology to be of value to clinical medicine must be founded on the modifications of physiologic action induced by drugs. The emphasis in a teaching laboratory must be placed on this principle. It presupposes a thorough knowledge of physiologic actions as such and normals of such minute and effective detail that the modifications induced by drugs can be quickly identified, classified and stored for use in clinical application. During this first decade of the development and organization of teaching courses in pharmacology, progress was handicapped by an inadequate supply of trained pharmacologists. That deficit has been long since met and we have now the benefit of such leaders as Hunt, Sollmann, Loevenhart, McNider and Leake. As for research in pharmacology, it is only the natural unfolding of the science that has carried forward in the second and third decades from its elementary and organized teaching basis into the field of advanced problems and constructive research. This has been the second cycle of growth and development. In the first decade, the organization and foundation for normal teaching, in the second decade, development of constructive research and the advancement of research problems, and now, at the present, wide distribution of well organized laboratory courses required in every medical school, with staffs specially trained and doing constructive investigational work of the type and quality that have so rapidly expanded the pharmacologic field. I am old enough to have seen the successive steps and therefore to emphasize the fact that in the past thirty-six years there have been sweeping epochs of development of teaching, of research, of application of the principal of research to practical therapeutics.

DR CARL A. DRAGSTEDT, Chicago. This timely paper calls attention to problems confronting the men attempting to teach what I think is one of the most difficult subjects in the curriculum to teach interestingly, adequately and well. With regard to the scope of the course, I do not like to feel that we should be constrained in teaching pharmacology to the practical matter of only the drugs that are used in practice and thus make our course a part of a trade school. I conceive of the department of pharmacology as a department in a university, that it should have university status and should aim to teach the subject with the same degree of perfection with which all the other sciences in a university are taught.

DR GEORGE E. WAKERLIN, Louisville, Ky. The question of bringing in a certain amount of applied pharmacology is important. The course in pharmacology in my estimation ought to bridge the gap between pure pharmacodynamics and therapeutics. Some of the courses in the various schools at present might be improved in this respect. One's attitude on the question of bridging the gap between pure pharmacodynamics and therapeutics depends to a certain extent on the training one has had. I think there will in the future be more agreement as to just exactly how this ought to be done in view of the fact that the training of pharmacologists is becoming more uniform. The same question arises in the teaching of physiology. For example, I have had students ask frequently if the department of physiology at the University of Louisville would not give a course in applied physiology, clinical physiology or pathologic physiology. In other words, the students will say 'We learned about the physiology of respiration, we know the normal mechanisms of respiration but we don't know what the mechanisms involved in paroxysmal dyspnea are when we reach the clinical years.' I am of the opinion that in physiology also an attempt should be made to bridge the gap between academic physiology and clinical physiology more effectively

than is being done. I grant that some of this gap is still unknown territory, but there exists a good deal of information, some of which ought to be given to students in physiology and pharmacology.

DR. DAVID R. CLIMENKO, Cold Spring Harbor, N. Y. I should like to make a direct suggestion for counteracting one of the faults the authors found that is, the lack of interest that is usually shown by students in pharmacology. I think this can be overcome in a simple manner: there is no necessity for multiplying the number of drugs the student must consider. The careful study of a few well selected drugs, with the demonstration of the pharmacologic and therapeutic principles they illustrate, would more than make up for the lackadaisical instruction in the effects of a much larger number of drugs. This elimination of a large mass of purely factual knowledge would in itself tend to make a course in pharmacology far more interesting to the student. This increase in interest may be augmented by the introduction of clinical material. I do not mean the presentation of a patient with auricular fibrillation to students in pharmacology but rather the demonstration of clinical charts and records illustrating therapeutic effects. I have always noticed that one of the subjects that students pay most attention to and seem to be most interested in is the cardiac glucosides, and I think this is largely due to the fact that the teaching of this subject is largely dependent on the demonstration of clinical material.

DR. CHAUNCEY D. LEAKE, San Francisco. If the chairman might be permitted a remark, it is to emphasize again the distinction between the scientific aspects and the artistic aspects of medicine. In pharmacology, the actions of drugs may be demonstrated in a factual manner. That is the science of it. The application of this factual information to the problems of diagnosis or of the prevention of disease or the cure or the treatment of disease by means of chemical agents is a matter calling for artistic judgment, which depends on the individual problem presented by the patients, the knowledge that the clinician has and the judgment or skill he uses in making the application. That judgment can be trained only by long experience. But the scientist in teaching the action of drugs can point the way by which applications may be made.

DR. GEORGE A. EMERSON, Morgantown, W. Va. I am grateful for the discussion and constructive criticism that has been offered here. I was particularly struck by the recommendation of Dr. Haag that pharmacologists be aware of the newer developments in therapy and in other sciences and show this by the introduction of more material on endocrines, for example. At West Virginia we have attempted to do this in a smaller way with the subject of anesthesia and have introduced a comprehensive course in elementary anesthesia into the pharmacology course. I appreciated Dr. Greene's remarks as to the history of pharmacology. I hope that the younger men in pharmacology will continue to build up the science as thoroughly as the older men have done. Dr. Dragstedt's recommendation that pharmacology should have the same status as any other university department should have the full support of all university administrators. One point that I did wish to bring out was that the change in the pharmacology course is necessary because of the change in the nature of therapeutics in recent years. The tremendous advance in the chemistry of drugs, the large volume of new, valuable, inactive or dangerous drugs that are constantly coming out, makes it necessary that the student be fit to judge drugs for himself. The pharmacology course should fit the student to make his own therapeutic prejudices independently of the therapeutic prejudices of his instructors or of the detail men later on. In the matter of therapeutics and pharmacology, perhaps I have been contaminated in my early training. Both Dr. David and I have been told at California that pharmacology is concerned with the action of drugs. Drugs have four applications in medicine: prevention, diagnosis, alleviation of symptoms and cure of disease. Half of the use of drugs in medicine is not strictly therapeutic use. We are concerned with diagnosis of disease or the prevention of disease as well as the cure or the alleviation of symptoms. Dr. Climenko's recommendation that fewer drugs be taught is well taken. If the course is restricted to drugs that really work, we have few enough drugs to work with.

FRACTURE OF THE NECK OF THE
FEMUR IN CHILDREN

JOSEPH I. MITCHELL, MD

MEMPHIS, TENN

The problems encountered in treating a small group of young patients with fracture of the neck of the femur have demonstrated specific hazards in the management of this fracture which affect the prognosis and the ultimate functional result. Bony union takes place promptly, as is true of most fractures in childhood, there being slight danger of nonunion and disaster so greatly feared when this fracture occurs in the aged. The unfavorable prognosis that is associated with fracture of the neck of the femur in childhood arises from the frequent occurrence of malunion in the *coxa vara* position. This deformity tends to increase with weight bearing and may lead to extreme disability.

The reasons for the occurrence of union of the fracture in malposition may be structure of the bone at the site of fracture, muscular contraction or early weight bearing. The difference in osseous structure in youth and old age influences the character and site of the fracture, in children the fracture line generally crosses the base of the femoral neck, and separation of the fragments may be incomplete. Muscle pull in children is weaker than in adults, consequently reduction should be accomplished with ease and with most fractures displacement of the fragments after reduction should be less imminent. That these observations are not always constant is proved by the too frequent occurrence of poor functional end results following fracture of the neck of the femur in children. Furthermore, after most fractures in childhood, moderate deformity and displacement of the fragments may be overcome by the natural tendency for growth and repair of young tissues. This physiologic maxim does not hold true in fractures of the neck of the femur in childhood which have united with *coxa vara* deformity, under influence of weight bearing the shortening and impairment of function may increase, owing to a further descent of the depressed neck of the femur, until the head of the bone rests on the lesser trochanter.

HISTORICAL REVIEW

As is well known, fractures in and about the hip joint are common in the aged and relatively infrequent in childhood. Among the early records of the lesion is a report by Sir John Bland Sutton¹ of a pathologic specimen of an intracapsular fracture of the neck of the femur from an individual of about 15 years. This specimen was found in the museum of the Middlesex Hospital in 1883. In 1885 Cromwell² reported the fracture in a young subject. Whitman³ in 1890 reported a case and in subsequent articles, the last of

which appeared in 1909 added additional reports, making a total of thirty-one cases reported by him. Even in the early cases he differentiated between fracture of the neck of the femur in children and slipped femoral epiphysis, although the diagnosis was not confirmed by roentgenogram until 1897. Russell,⁴ Telford,⁵ Taylor,⁶ Colonna⁷ and others have emphasized the probability of latent symptoms following fracture of the neck of the femur in adolescents. In modern textbooks on orthopedic and traumatic surgery, however, this injury is generally dismissed with the brief statement that, although no age is exempt, fractures of the upper extremity of the femur occur more frequently in those past middle age. The method of treatment usually employed in the past for all age groups has been immobilization of the hip in abduction. Few surgeons have recognized that a technic which affords a high percentage of excellent end results in elderly patients may not be the method best adapted for the treatment of younger patients. The single modification of technic found in the literature is the recommendation by Bohler⁸ that "the condition is best treated by continuous traction for three months."

CLASSIFICATION

From careful inspection of a number of roentgenograms illustrating injuries of the femoral neck in childhood it can be demonstrated that the lesion may be divided anatomically into three types: (1) epiphyseal separation, (2) transcervical fracture and (3) cervicotrochanteric fracture. Traumatic separation of the upper femoral

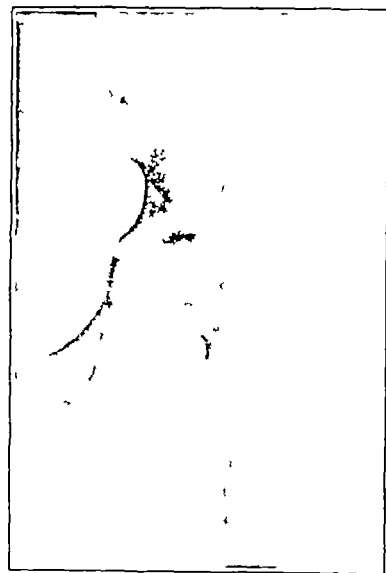


Fig 1 (case 1)—Traumatic separation of the upper femoral epiphysis

epiphysis is extremely rare, while the variety in which the fracture line is situated at the junction of the femoral neck with the trochanters the fracture classified by Delbet as the cervicotrochanteric type, is the most common. The fracture may be incomplete or the fragments may be impacted by the violence of the force.

In seven cases of this series the fracture occurred in the cervicotrochanteric area, two cases were transcervical and one was an epiphyseal separation. Of twelve cases reported by Colonna, eleven were cervicotrochanteric and one was transcervical. In adults, on the contrary, fracture of the neck of the femur is most commonly of the transcervical or subcapital variety.

From the Willis C. Campbell Clinic

Read before the Section on Orthopedic Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

¹ Sutton J. B. Presidential Address to the Surgical Section Royal Society of Medicine. *Brit. M. J.* 2:595 (Nov. 30) 1918.

² Cromwell B. M. A Case of Intracapsular Fracture of the Neck of the Femur in a Young Subject, North Carolina. *M. J.* 15:309 1885.

³ Whitman, Royal. Observations on Fracture of the Neck of the Femur in Childhood with Especial Reference to Treatment and Differential Diagnosis from Separation of the Epiphysis. *M. Rec.* 43:227 1893.

⁴ Further Observations on Fracture of the Neck of the Femur in Childhood, with Especial Reference to Its Diagnosis and to Its More Remote Results. *Ann. Surg.* 25:673 1897. *Tr. Am. Orthop. A.* 10:216 1897.

⁵ Further Observations on Depression of the Neck of the Femur in Early Life Including Fracture of the Neck of the Femur Separation of the Epiphysis and Simple *Coxa Vara*, *Ann. Surg.* 31:145 1900. Further

Observations on Injuries of the Neck of the Femur in Early Life with Reference to the Distinction Between Fracture of the Neck and Epiphyseal

Disjunction as Influencing Positive Treatment. *M. Rec.* 75:1 1909.

⁴ Russell R. H. A Clinical Lecture on Fracture of the Neck of the Femur in Childhood. *Lancet* 2:125 1898.

⁵ Telford E. D. On the Latency of Symptoms in Fracture of the Neck of the Femur in Adolescents. *Clin. J. London* 42:348 1913.

⁶ Taylor H. L. Fracture of the Neck of the Femur in Children. *New York State J. Med.* 17:508 (Nov.) 1917.

⁷ Colonna P. C. Fracture of the Neck of the Femur in Childhood. A Report of Six Cases. *Ann. Surg.* 88:902 (Nov.) 1928. Fracture of the Neck of the Femur in Children. *Am. J. Surg.* 61:793 (June) 1929.

⁸ Bohler Lorenz. The Treatment of Fractures. fourth English edition translated from the fourth German edition by E. W. Hey Groves. Baltimore: William Wood & Company 1935.

FRACTURE OF FEMUR—MITCHELL

TYPE 1 EPIPHYSEAL SEPARATION

CASE 1—B O, a white boy, aged 10 years, who had been well previously, fell down a flight of stairs and struck his hip against a door. In spite of immediate pain in the hip and thigh he was able to walk three blocks to his home. He was put to bed and remained there for one week. A roentgenogram of the hip was said to be negative and his attending physician allowed the boy to walk with crutches. The pain gradually subsided, but shortening of the limb developed and movement of the joint was limited. On examination the leg was found to be one-half inch shorter than the right and fixed in external rotation and adduction.

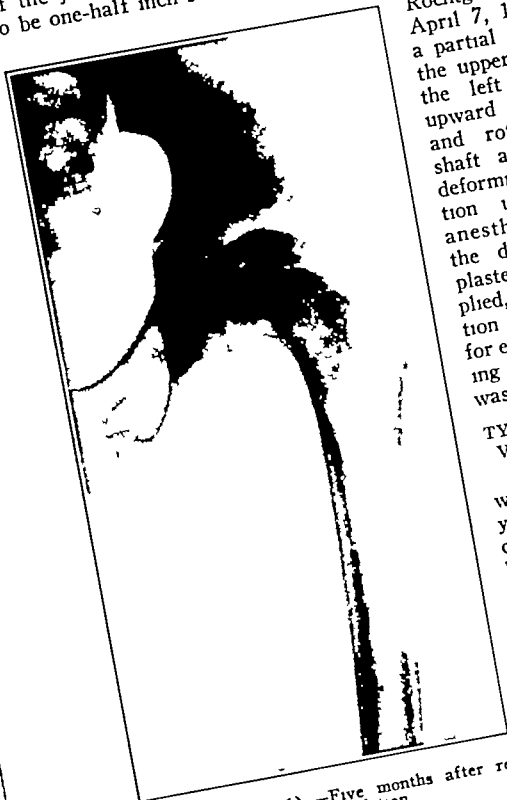


Fig 2 (case 1)—Five months after reduction by closed manipulation

TYPE 2 TRANS-CERVICAL FRACTURES

CASE 2—R A, a white girl, aged 13 years, brought to the clinic July 31, 1930, had fallen from a swing one week previously a distance of 15 feet injuring the left hip. On examination there was tenderness about the hip most marked over the greater trochanter.

limitation of motion at the hip, and one-half inch shortening of the left leg. The roentgenogram showed a transcervical fracture of the femur. Under gas anesthesia the limb was manipulated, full abduction and internal rotation being secured, a roentgenogram at that time showed excellent reduction of the fragments. The limb was removed, September 25, and an abduction hip brace applied. The fracture appeared to be firmly united at that time, with a slight coxa vara deformity. Weight bearing was not permitted for three months. In spite of treatment, which was believed to be adequate for protection of the fracture, the coxa vara deformity progressed and the apparent shortening of the femur until the left leg was apparently $1\frac{1}{2}$ inches shorter than the right. In May 1931 a wedge shaped osteotomy of the coxa was performed, this did not however fully correct the shortening. In December 1934 the patient again returned to the hospital because of adduction deformity of the hip that seriously interfered with walking. There was actual shortening of one half inch and apparent shortening of 2 inches. Operative correction was once more advised and carried out Dec 11, 1934. On this occasion an oblique osteotomy of the femur was done beginning at the greater trochanter and extending downward and inward for a distance of about 3 inches on the shaft of the femur. The lesser trochanter and the femur was detached in order to release the pull of the iliopsoas muscle. A wire was inserted above the union of the osteotomy was firm. Three months later union of the osteotomy was firm. The deformity has been relieved and the patient walks without a perceptible limp.

CASE 3—E S, a white boy aged 14 years examined July 5, 1930 had sustained a fracture of the neck of the right femur

fifteen months previously, when the automobile in which he was riding was struck by a railroad train. The fracture had been reduced and immobilized in plaster casts, but union had not occurred. The roentgenogram showed a fracture of the neck of the femur with nonunion. Operation was advised and the patient was returned for treatment in June 1931. A bone graft to the neck of the femur resulted in solid union. Motion in the hip is, however, greatly limited, and it is necessary for the boy to wear an elevation of 2 inches on the sole of the shoe.

TYPE 3 CERVICOTROCHANTERIC FRACTURES

CASE 4—S A, a white girl, aged 6 years, admitted to the hospital Oct 26, 1931, had fallen from a porch, a distance of about 4 feet, two weeks before admission, and had been unable to bear weight on the right leg. The roentgenogram demonstrated the fracture at the cervicotrochanteric region of the femur, with considerable angulation of the fragments. The fracture was reduced by the Whitman method, and following immobilization in a plaster cast for three months union was solid. The result is classified perfect function, since the mother reports by letter that the child does not limp.

CASE 5—J T, a white boy aged 16 years, brought to the clinic July 12, 1934, complained of an old fracture of the right hip which he received nine months before when he fell from a tree. The fracture had been recognized, immediately reduced and immobilized in a plaster cast for ten weeks. Union had occurred with adduction deformity and with $1\frac{1}{2}$ inches shortening of the extremity. The roentgenogram showed a fracture of the neck of the femur with absorption of the neck and coxa vara. Operative correction consisted of an oblique osteotomy of the femur along the intertrochanteric line, detachment of the lesser trochanter so that it could be reattached higher up after traction, and insertion of a wire through the lower end of the femur for skeletal traction. Fixed internal rotation of the thigh necessitated a second operation of supracondylar osteotomy for derotation of the lower leg. One year later the patient was walking with a slight limp, there was 1 inch shortening but greatly improved function of the limb.

CASE 6—J E. M.

a white boy, aged 8 years, brought to the hospital Aug 21, 1935, had fallen 10 feet from a stack of barrel heads eleven months before while at play, sustaining a fracture of the neck of the left femur. After reduction of the fracture, a cast was worn for six weeks. The child was then allowed to walk. A deformity at the hip developed with 1 inch shortening of the leg causing the boy to limp. The roentgenogram demonstrated the typical cervicotrochanteric fracture of the neck of the femur which had united in malposition. Operative correction consisting of oblique osteotomy and skeletal traction similar to that employed in cases 2 and 5 was carried out. The shortening of the limb was reduced to one fourth inch and although the child is still wearing a brace function has been greatly improved.

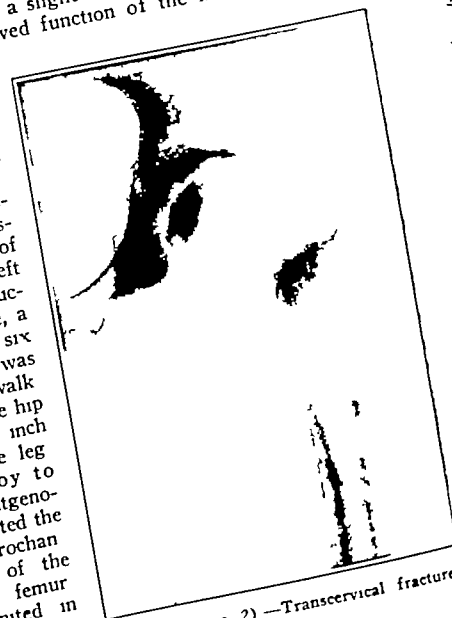


Fig 3 (case 2)—Transcervical fracture of the neck of the femur

CASE 7—M D B, a white boy aged 6 years, was admitted to the hospital Nov 9, 1935 for a fracture of the right femur. The injury had been sustained four days before when the patient fell under and was struck on the hip by a seesaw on which several other children were sitting. The roentgenogram revealed a cervicotrochanteric fracture of the right femur. There was displacement and angulation of the fragments.

Under ether anesthesia the fracture was manipulated and reduced. Roentgenograms in both planes showed excellent position. A double spica cast was applied with the Hoke-Martin apparatus incorporated for continuous traction on the leg. The cast was worn for ten weeks and walking in an abduction brace was permitted at the end of three months. Firm union of the fracture occurred in the anatomic position.



Fig. 4 (case 2)—Immediately following reduction by closed manipulation

injury the right hip, and had been unable to walk after the accident. The roentgenogram showed a cervicotrochanteric fracture of the right femur, with absorption of bone along the fracture line. A plaster cast was applied without manipulation of the fracture. The boy has moved from the city and has not been reexamined but the parents report by letter that he has an excellent functional limb without a limp.

CASE 10—R L M., a Negro girl aged 11 years, seen Jan 27, 1936, had fallen down a flight of stairs five months previously, receiving a fracture of the left femur at the hip, a fracture of the pelvis and a fracture of the left radius and ulna. The original roentgenograms were obtained, which showed a cervicotrochanteric fracture of the femur and excellent postoperative position immediately following reduction. The limb had been immobilized in a cast for five months. Union of the fracture had occurred in a position of *coxa vara* with 1 inch shortening. Surgical correction of the deformity has been advised but was refused by the parents.

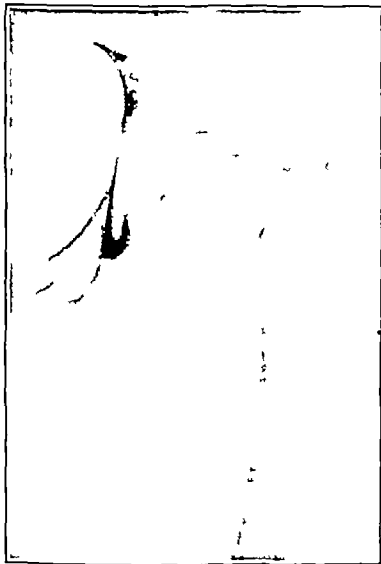


Fig. 5 (case 2)—Eight months after reduction showing bony union with *coxa vara*

CASE 8.—J H, a Negro girl, aged 4 years, fell from a second floor window, Aug 6, 1934 sustaining multiple fractures, namely, a fracture of the neck of the left femur, a fracture of the pelvis and a fracture of the left tibia and fibula. A roentgenogram made after reduction of the fractured femur at the Memphis General Hospital showed good reduction. The child has not returned for observation and cannot be traced.

CASE 9.—E V, a Negro boy, aged 12 years, entered the Memphis General Hospital, Aug 27, 1934. Four weeks prior to admission he had fallen from a tree

days following the accident and seven were seen late. In three patients examined late, bony union had occurred with *coxa vara* deformity, and in one there was nonunion of the fracture. Two Negro patients cannot be traced, and in these cases the end results are not known other than that bony union was occurring when the patients were discharged from the hospital. In seven of the cases the site of the fracture was at the cervicotrochanteric junction, in two the fracture was transcervical, and one was an epiphyseal separation.

The cause of the fracture in each case was trauma of much greater violence than is associated with fracture of the neck of the femur in adults. This fact is forcibly demonstrated in the case histories. One patient fell from a swing a distance of 15 feet, one was injured when the automobile in which he was riding was struck by a railroad train, one fell from a high porch, two patients were injured by falling from trees, one fell from a stack of barrel headings, one fell under and was struck by a seesaw on which several other children were sitting, two fell down steps and one fell from a second story window. The violence of the injury is further demonstrated by the association of other traumatic lesions with the fractured femur. Two patients received in addition a fracture of the pelvis, one of these also had a fracture of the radius and ulna, and one had a fracture of the tibia and fibula. Bony union occurred promptly in nine instances. However, solid union in the anatomic position, which is necessary for a good functional result is known to have occurred in only three of the cases. Four fractures united in malposition there was one nonunion, one patient cannot be traced, and one is wearing a brace.

The diagnosis of fracture must always be excluded following injury to the hip. The positive physical signs are shortening of the limb of from one-fourth to three-fourths inch, prominence of the greater trochanter, which is elevated above Nelaton's line, and adduction and external rotation of the leg. A roentgenogram should be made in every case of suspected fracture. In children the fracture line is usually, as previously stated, at the cervicotrochanteric junction. Errors in diagnosis are due largely to failure to examine the small patient carefully. In untreated cases differentiation must be made between fracture and disturbance of growth in the upper femoral epiphysis.



Fig. 6 (case 2)—Five years after fracture occurred. *Coxa vara* has been corrected by osteotomy.

TREATMENT OF RECENT FRACTURES

Two of the three recent fractures in this series, cases 2 and 4, were reduced and immobilized in the Whitman position. In case 4, a girl aged 6 years, a good result was secured. In case 2, a girl aged 13,

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years, the Whitman method failed to give a satisfactory result and two subsequent operations were necessary to correct coxa vara deformity. In case 7, a boy, aged 6 years, a perfect anatomic and functional result was obtained by continuous well leg traction, the Hoke-Martin apparatus being incorporated in a plaster cast. Therefore, since angulation of fragments causing coxa vara is so imminent and results in such serious disability, it is recommended that all recent fractures of the neck of the femur in children be treated by continuous traction for eight weeks and that the limb be protected from full weight bearing for three months even after the patient is allowed to be ambulatory.

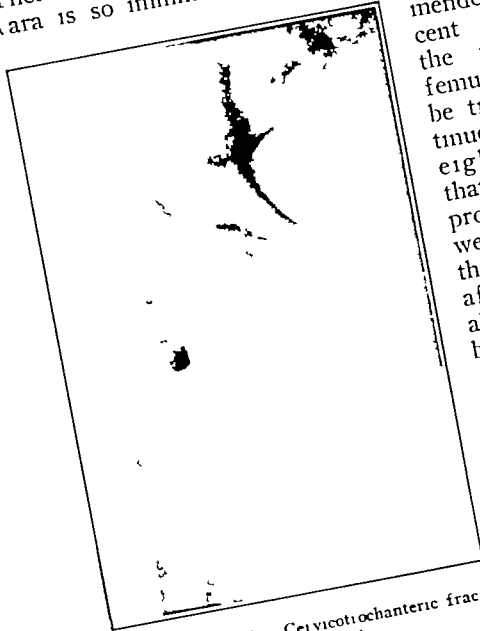


Fig 7 (case 7) —Cervicotrochanteric fracture of the neck of the femur

TREATMENT OF MALUNITED FRACTURES

In four of the patients the fracture united in malposition causing coxa vara deformity, shortening of the extremity and a limp with serious disability. The coxa vara deformity has been corrected and the femur lengthened in three of these patients (2, 5 and 6) by an oblique osteotomy of the femur followed by skeletal traction. The operation has been advised also in case 10, but the child's parents have not given their consent. In a boy aged 14 (case 3) there was nonunion of the fracture requiring a bone graft to the neck of the femur.

CONCLUSIONS

Fracture of the neck of the femur may occur in childhood and is probably not an uncommon accident, although it may be unrecognized until a later period. The lesion may be one of three types: (1) epiphyseal separation, (2) transcervical fracture and (3) cervicotrochanteric fracture. The site of the fracture is usually at the cervicotrochanteric junction. Bony union occurs promptly as a rule, but often with coxa vara deformity, which causes subsequent disability of a serious nature.

Treatment by continuous traction combined with immobilization of the hip in abduction is advised to prevent coxa vara and shortening of the extremity. After union in malposition great improvement in position and function may be secured by an oblique osteotomy of the femur, followed by skeletal traction.

869 Madison Avenue

ABSTRACT OF DISCUSSION

DR. PAUL C. COLANNA, New York. Fractures of the neck of the femur in children occur far more frequently than is ordinarily thought. In the last ten years I have had eighteen. They followed the same general rule with regard to the history and to violence as a causative agent that Dr. Mitchell has pointed out. My patients ranged in age from 3½ to 15 years. The fractures have been in the main of two types. I am speaking not of the epiphyseal clippings or epiphyseal fractures

but of fractures of the neck of the femur per se. These have been the incomplete and the complete fractures, the incomplete or the hinge type that Dr. Henry Ling Taylor described years ago being the more frequent. Fortunately one can hear a discussion of fractures of the neck of the femur without feeling that one is going to be worried about nonunion. Union is the usual result in children, but union, unfortunately, in poor position many times. Many of these patients walk into the clinic or into the office presenting very little local symptoms of pain. In some instances the pain has been directly referred to the knee joint and no attention has been paid to the hip. I think that the mildness of the symptoms in the incomplete type is very striking. I have been accustomed to immobilizing these patients for at least three months and I think that a longer period in plaster is sometimes advisable as well as protection with a brace following the removal of the plaster.

DR. S. L. HAAS, San Francisco. There are two points I wish to bring out. One is the occurrence of nonunion in children. The other is the necessity of differentiating congenital coxa vara from fracture of the neck of the femur. A girl at the age of 10 years fell from a height and fractured her femur. Successful reduction was obtained by a physician in a small town in California. Subsequent to the reduction the fragments displaced. Three years later the patient was seen at Shriners Hospital. There was no complaint of pain but there was a limp, a short leg and limitation of motion at the hip joint. The roentgenogram at this time showed nonunion of the fracture at the neck of the femur. Walking was possible as the stump of the neck impinged on the border of the acetabulum. At the first operation the fibrous tissue was excised at the site of union and a small graft from the intertrochanteric region placed across the line of fracture. Osseous union occurred promptly. The existing coxa vara was corrected by a diagonal intertrochanteric osteotomy and traction in abduction. She obtained an excellent result, there being no shortening, no limp and a good range of motion. The other point I wish to bring out is the necessity of differentiating congenital coxa vara from fracture of the neck of the femur. A patient who gave a history of injury with subsequent limp and loss of motion at the hip joint had a definite defect across the neck of the femur which was a congenital or developmental change. In this patient the films showed a similar condition on the opposite side. Careful study showed a small triangular area on the lower side of the neck which placed it in the type of coxa vara juvenilis. In unilateral cases this condition may be mistaken for a fracture. In this patient the area of maldevelopment of bone was exposed. The cartilaginous and osteoid tissue were excised and a graft was inserted across the defect. The coxa vara was corrected by a diagonal intertrochanteric osteotomy.

DR. RALPH G. CAROTHERS, Cincinnati. There is one point which has not been brought out but which I have had called to my attention a number of times and that is a history of two accidents. A boy fell out of a swing and bruised his hip and a few days later he fell downstairs and broke his hip. That story has come too often to be disregarded. I believe these patients get a greenstick fracture and then get another one on top of it. One never sees a picture of the first accident but in the majority of cases I have seen there have been two

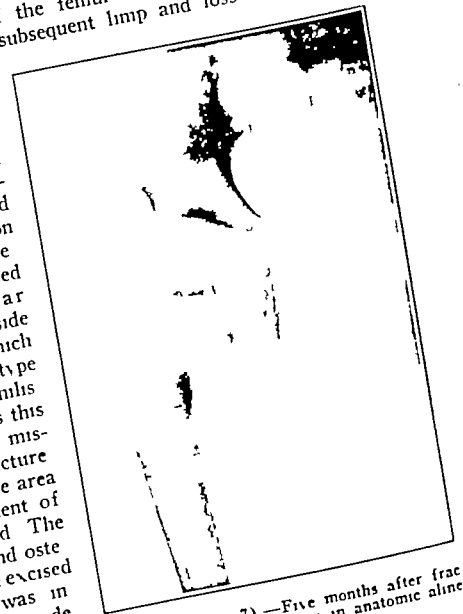


Fig 8 (case 7) —Five months after fracture showing bony union in anatomic alignment

LATE INFECTION FOLLOWING THE USE OF PINS AND WIRES IN BONES

S L HAAS, MD
SAN FRANCISCO

Pins and wire are being used today with increasing frequency in bone surgery, and the practice has been held by many to be free from dangerous sequelae. Various ingenious types of apparatus have been



Fig 1 (case) —Thickening and eburnation of cortex two years after lengthening operation. Rarefied area found filled with granulation tissue. Small area containing polymorphonuclear and dead bone found on microscopic examination

designed that require the utilization of pins or wire to obtain fixation and correction of alignment of fractures and for bone lengthening. Although I accept the use of pin or wire extension as an excellent means of obtaining reduction of certain types of fractures, I maintain that it is often used in the treatment of many fractures which could be easily handled by other efficient methods not demanding skeletal traction.

In spite of every aseptic precaution there is always the possibility of an infection when a metal pin or wire is inserted into a bone. There are no definite statistics but there has been a considerable number of disastrous results following the use of wire or pins for traction. Extensive infections of the soft parts, persisting sinuses and osteomyelitis with sequestrums occur, at times necessitating extensive surgery and even amputations.

The indiscriminate and careless use of this method will increase the number of untoward results. Well can one remember the bad results following the promiscuous insertion of the Lane plate so that today metal plates are being used in relatively few clinics, and then with special indications. It behooves the surgeon to be careful in his selection of cases for wire and pin traction so that this method also will not come into disrepute.

Even though the pins or wires are inserted under strict aseptic technic, the tract is potentially an infected one. Wires and pins have an external opening which in itself acts as a drain and gives some protection. On the other hand the external opening serves as a portal of entry for bacteria. Fortunately, after the insertion of the wire or pin a defense barrier of granu-

lated tissue is formed along the course of the wire and serves to inhibit infection. The prevention of motion is important in order not to injure this barrier and open up new avenues for the invasion of bacteria. For the same reason the pins or wires should be removed with aseptic technic and with the minimum amount of trauma.

After removal of the pin one finds a narrow, deep sinus part in bone and part in soft tissue. The soft parts heal faster than the bone, so that there is formed a sealed off firm, noncollapsing tube in the bone. With the hemorrhage produced on removal of the foreign body and the sealing off due to the more rapid healing from outside, one has the ideal set up for the incubation of latent bacteria. Fortunately this does not take place very often, and healing proceeds in an orderly manner. In a certain number of cases there is a slow healing of the wound, and a sinus may persist for a considerable length of time. Occasionally small sequestrums may discharge or one may be called on to curette the wound and remove these sequestrums.

Having escaped any trouble immediately after the removal of the pin, one is not sure that there may not remain within the bone some dormant infection that may light up at a subsequent date, even after many months. This is not merely a theoretical possibility but does actually occur, as is shown in the following experiences in lengthening operations of the leg (tibia and fibula). There were three cases of latent osteomyelitis in a series of seventy operations. Following the healing of the wounds and when it was thought that everything was normal there were mild symptoms

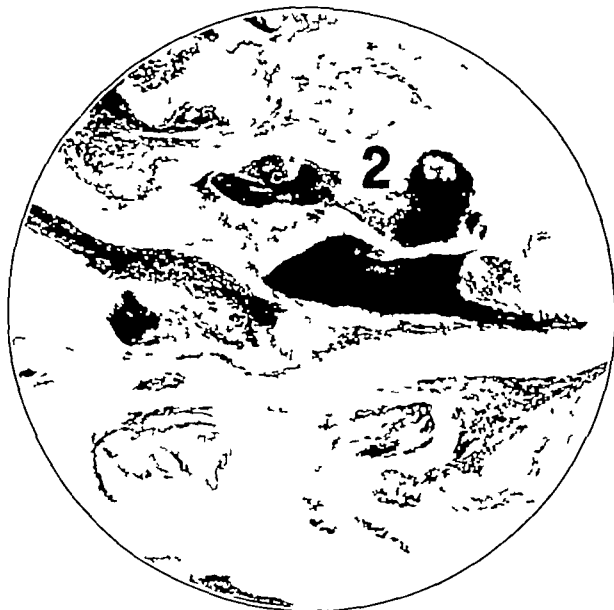


Fig 2 (case 1) —Section of tissue removed at operation. The marrow has been replaced by fibrous tissue containing mononuclears. At one place there is a piece of dead bone surrounded by polymorphonuclear cells.

of pain followed by local signs of swelling and tenderness demanding operative intervention.

REPORT OF CASES

CASE 1—G O, a boy aged 11 years, had had infantile paralysis at the age of 2 years. July 16, 1930, the tibia and fibula were lengthened in a routine manner. A single metal pin was used in each fragment. September 17, sixty-three days after insertion the pins were removed from the leg. The healing was complete about two weeks later.

April 9, 1931, seven months later, there was swelling at the upper pinhole. The roentgenogram showed what appeared to be a small sequestrum. The swelling subsided and there was no further pain.

July 21, 1932, about twenty-two months after healing of the pinholes, he began to have severe pain in the leg at night. Examination showed a little increase in the size of the tibia but no pain on pressure.

September 22 he again began to have pain at night in the upper part of the tibia. Examination showed slight swelling and tenderness. Roentgenograms showed a heavy increase in density and thickness of the cortex of the upper end of the tibia. There were two areas of bone destruction within this region. The patient was then practically free from pain for about six months, when the leg once more became painful. There was some swelling but no redness, and slight tenderness on pressure.

March 26, 1933, two and one-half years after the lengthening operation, the patient was admitted to the hospital because of persistence of pain in spite of rest and protection. Examination showed an enlargement of the upper end of the tibia. There was no tenderness at this time and no fever. Roentgenograms showed what appeared to be two small sequestrums in an oval cavity 10 cm. from the knee joint (fig. 1).

April 3 an incision was made over the upper end of the tibia. The periosteum was found thickened with a considerable osseous reaction beneath it. The cortex was eburnated and thickened. After the cortex had been cut through, a cavity was found about 2.5 cm. in length. It was filled with granulation tissue, which was completely removed down to healthy bone. The overhanging edges were smoothed off, after which the cavity was washed out with ether. The skin was folded into the wound and a petrolatum pack was inserted. Plaster was applied. The patient made a good recovery with little reaction about or discharge from the wound.

Pathologic examination showed at one place dead bone surrounded by polymorphonuclear cells. The normal marrow



Fig. 3 (case 1)—High power magnification of area marked 2 in figure 2 showing dead bone surrounded by polymorphonuclear cells.

elements were replaced by fibrous tissue with a collection of lymphocytes, some of the plasma cell type. In places there was evidence of bone being regenerated (figs. 2 and 3).

Twenty-two months after removal of the pins, patient 1 began to have pain in the leg which subsided gradually and remained quiescent for six months. Recurrence of pain demanded operation two and one-half years after removal of the pins.

CASE 2.—T. W., a boy aged 13 years, had a short left leg following infantile paralysis. Stabilization of the foot and

transplantation of the biceps into the patella had been performed on the left side.

Operation, March 11, 1931, consisted of routine lengthening of the tibia and fibula and the achilles tendon. Two pins were placed in the upper fragment and one in the lower fragment. By April 11, full degree of lengthening was obtained. May 11 two months after insertion, the pins were removed.

Feb. 11, 1933, about two years after the lengthening operation, the patient stated that he bumped his leg three days previously, after which it became sore and swollen. There was

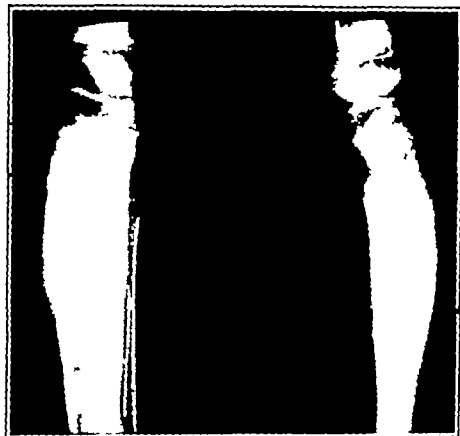


Fig. 4 (case 2)—Enlargement and increased density of the bone with rarefied area toward the medulla, two years after lengthening operation. At operation a cavity was found in the bone filled with granulation tissue.

a slight discharge near the upper pinhole. Swelling had subsided some and there was no pain when he was examined in the clinic.

March 23 the patient was admitted to the hospital because of returned swelling and discharge from the upper end of the tibia. Examination showed a fluctuating area $1\frac{1}{4}$ inches in diameter over the upper inner side of the left tibia and a small granulating sinus tract on the outer side. There was tenderness on pressure over the bone in this region. The temperature was within normal range. The roentgenogram showed marked thickening and increased density of the upper end of the tibia. There was a small rarefied area present toward the center (fig. 4).

March 24 the fluctuating mass was opened from which place a sinus led down to the cancellous bone. There was a considerable amount of granulation tissue present, which was cleaned out. No sequestrums were found. The cavity was washed out with ether and packed with petrolatum gauze. Plaster was applied from the toes to the thigh. He had an uneventful postoperative course. Healing was not complete until September.

On pathologic examination there was some bone the nuclei of which were poorly stained. Some of the apparently dead or degenerated bone was surrounded by new bone. The marrow was replaced by fibrous tissue containing in places collections of mononuclear cells (plasma cells).

In case 2, two years after the lengthening operation it was necessary to drain an infected area in the upper end of the tibia.

CASE 3.—P. G., a boy, aged $10\frac{1}{2}$ years, at the age of 9 months had had anterior poliomyelitis resulting in paralysis of the right arm and leg. At the time of admission he had 2 inches (5 cm.) of shortening.

Aug. 4, 1933, the right tibia and fibula were lengthened. Four bicycle spokes were used—two in the upper and two in the lower fragment. September 12 lengthening was completed. There was considerable reaction about the lower of the two upper pins. The highest temperature after operation was 38°C (100.4°F) and was normal after three weeks. The pins were removed sixty-five days after their insertion.

November 30 all areas were completely healed and the patient was sent home.

Sept 5, 1935, two years after the lengthening operation, the patient returned, stating that he had recently bumped his right leg. Following this the bone became enlarged and was slightly painful. Examination showed enlargement of the upper end of the right tibia just below the site of the former pinholes. It was slightly tender to deep pressure. The roentgenogram showed an area of rarefaction in the upper end of the tibia. The bone was enlarged in this region and was very dense (fig 5).

September 11 an incision was made in the upper portion of the leg, on the medial side. Dissection was carried down to the tibia, where a sinus tract presented through the periosteum. The tract was traced down and through the cortex to a cavity in the region of the medulla which was filled with granulation tissue and a puslike material. The cavity was cleaned out, after which the edges of the cortex were tapered off. The skin and subcutaneous fat were folded in and sutured in place without drainage. A plaster was applied from the toes to the groin. Culture on plain agar gave no growth. The wound was completely healed, October 12.

The patient was last seen April 9, 1936, seven months after operation, at which time he stated that he had had no subsequent trouble. The leg looked normal and x-ray examination showed no evidence of disease of the bone.

Two years after apparent healing following a lengthening operation, patient 3 hit his leg. There was a swelling of the leg and some pain. At operation

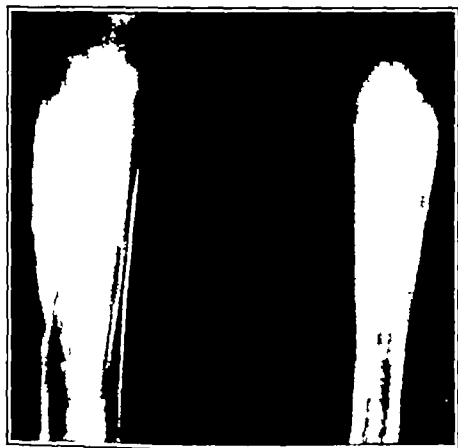


Fig 5 (case 3)—Thickening of bone and increased density of cortex two years after lengthening operation. Moth-eaten appearance of bone. At operation a cavity was found filled with granulation tissue.

granulation tissue was found in a rarefied area in the upper end of the tibia. No growth was obtained on plain agar.

COMMENT

The reported operations were all in children, in whom osteomyelitis is more prone to develop.

Trauma appears to have been an exciting factor in stirring up the latent infection.

The infection is usually in the cancellous bone near the metaphysis.

In lengthening operations there is greater force required than in most corrective procedures. The greater pressure may tend to produce necrosis of the bone, which in turn may favor infection.

There is less local disturbance if stainless steel wire is used in bone.

Pathologic examinations revealed evidence of a low grade infection. Small areas containing dead bone and pus cells were found in one case. The marrow was replaced by a fibrous tissue such as one sees in osteitis fibrosa. No definite sequestrums were found, but on

microscopic examination there was evidence of necrotic trabeculae, some showing signs of regeneration about the periphery.

Operations on an extremity subsequent to the insertion of a pin or wire may be followed by an infection.

CONCLUSION

Pins and wires inserted into bone may cause immediate or late infection of the bone.

These latent infections may be stirred up by trauma several years after the insertion of the pins.

Skeletal traction with pins and wires should be limited to cases in which other methods are not as efficient.

450 Sutter Street

ABSTRACT OF DISCUSSION

DR. ROGER ANDERSON, Seattle. This paper is very timely, as skeletal traction is widely used. The dangers that may occur must be kept in mind. Many infections occur at the time the transfixions are inserted and these can all be avoided if the proper technic is used. The Steinmann pin may be contaminated when it is removed from the sterilizer with the lifting forceps which is frequently unsterile. When the sharp end of the pin is placed on the table it not infrequently penetrates the sterile sheet and thus becomes infected. This can be avoided by placing a cork over the point and attaching a handle to the opposite end of the pin before it is placed in the sterilizer. Thus, the transfixion is inserted without being touched by the gloved hand. Careful preparation of the sterile field is also essential. One of the frequent causes of late infections is the repeated observation and dressing of transfixion wounds. Sidewise motion of the limb on the transfixion will also result in an infection. These dangers can be eliminated by firmly incorporating the transfixions in a snug-fitting plaster cast. Another means of preventing infection from sidewise motion—paradoxically as it may seem—is to insert two transfixions at an angle to each other. An aseptic necrosis with discharge not infrequently results when too much traction is applied to the bone, such as occurs in bone-lengthening operations. This can be avoided by equalizing the traction with the insertion of two or more transfixions and incorporating them in the plaster cast. A wire improperly tightened is another source of danger. It has been my experience that the placement of the transfixions is an important factor. If the transfixions are placed closer to the joints, the structure of the bone in that area is such that it stands the traction better than when they are placed through marrow or dense cortical bone. Pulling of the skin against the transfixions will in time result in an irritation discharge and some pain. This can be avoided by extending the cast for some distance both above and below the transfixion. However when it is advisable to obtain joint movement, this discharge and pain may be disregarded as it is not a cause for concern. It is only an aseptic reaction and if the limb is kept quiet for a few days, it usually subsides.

DR. W. K. WEST, Oklahoma City. At the University of Oklahoma Children's Hospital we have been using Kirschner wire traction in many types of orthopedic cases. We do not use Steinmann pins because our experience in the past has shown that the danger from infections, when pins are used, is much greater. We have had no late infections develop as described by Dr. Haas. We did have one case of primary hematogenous osteomyelitis develop around a wire which was being used to correct knee flexion in a case of poliomyelitis. This child developed a furuncle on the wrist and ten days later the infection invaded the upper part of the tibia—that portion of the bone which surrounded the Kirschner wire. The destruction was so extensive that we were positive that it was not an infection resulting from a local contamination. This is the only case of the kind we have seen. When wire traction is used in compound fractures, it frequently happens that local infection develops about the wires, but in all cases the bone sinus clears up within two or three weeks following removal of the wire. It is my opinion that wire traction has the most

important place in the prevention and correction of deformities. In the great majority of cases no reaction will take place because of its use and in cases in which infection does develop the percentage of bad results is very small.

DR SYLVAN L. HAAS, San Francisco. I have been doing lengthening operations for more than ten years. These three cases occurred during one year. Fortunately, I had none before and have had none since. I keep this in mind as a warning and hesitate to say that there will be no further trouble later on. With the pins and wires that are being inserted now one might go along for a number of years and not have any trouble, but there is the possibility of a late infection in the bone.

RESULTS OBTAINED BY SUBCUTANEOUS PINNING OF FRACTURES THROUGH NECK OF FEMUR

AVERY ROWLETTE M.D., J. R. HASLEM M.D.,
R. B. SIEGERT, M.D., H. D. MORRIS M.D.
AND
J. ALBERT KEY M.D.
ST. LOUIS

During the past five years, 380 patients who had fractures of the hip were admitted to the fracture service of the St. Louis City Hospital No. 1, 214 of these were trochanteric fractures and 166 were fractures through the neck of the femur.

The routine treatment for the trochanteric fractures has been suspension and traction in a Hodgen splint, and this method can be depended on to give a satisfactory result with bony union in good functional position in from eight to twelve weeks in those patients who survive. As will be mentioned later, our mortality in trochanteric fractures has been 37.7 per cent.

In the fractures through the neck of the femur neither the large abduction plaster-of-paris spica nor the treatment by traction has given satisfactory results in our hands. Consequently we have sought a method which we could use that would increase the percentage of union in these fractures and not greatly increase the mortality. We early recognized the value of the flanged nail of Smith-Petersen but found that the hospital administration objected to the expense of the nail and that very few of the patients could afford to pay for the nail. A further objection was that the introduction of the nail required an open operation, and we wished to avoid this if possible.

Having been impressed by the reports of Knowles¹ and Gaenslen² concerning their experiences with the methods of fixing the fragments by subcutaneous pinning and by the cheapness, simplicity and relative safety of the methods we decided to use the methods as a routine on all fractures through the neck of the femur. The method of Knowles has been modified to the extent that the stainless steel pins are threaded and are screwed into the bone. This was because one of us (J. A. K.) had the unhappy experience of having a smooth pin back out in a patient who had several furuncles. Infection of the pin wound and eventually of the upper end of the femur occurred and death resulted.

The method used at present is as follows. After a preliminary hypodermic of morphine about 20 cc of 1 per cent procaine hydrochloride is injected into the hip joint, the method described by Moore³ being used of inserting the needle vertically to the surface of the thigh at a point 1 inch below Poupert's ligament and three-fourths inch lateral to the femoral artery. The patient is then placed on a fracture table and the hip is reduced by the Leadbetter⁴ method. The thigh is flexed to 90 degrees and slightly adducted and externally rotated to unlock the fragments, and then traction is made directly upward in the long axis of the femur while an assistant pulls the upper thigh outward and downward to get the fragments in line and tighten the capsule around them. While the traction is maintained the thigh is circumducted outward and downward and internally rotated to bring the extremity down to the level of the table and in a position of moderate abduction and full internal rotation. Then the Leadbetter heel-palm test is applied. The heel of the abducted and internally rotated extremity is supported on the surgeon's palm. If the limb remains in internal rotation the reduction is considered satisfactory and the extremity is fixed on the fracture table, and anteroposterior and lateral roentgenograms are made. If the limb rolls outward the reduction is repeated until the internally rotated and abducted extremity can be supported on the palm of the hand.

While the films are being developed the skin below the trochanter is painted with iodine and it and the deeper tissues over the lateral surface of the thigh below the trochanter are anesthetized with procaine hydrochloride. The local anesthesia is carried down to the femur. When the films are developed and the reduction is found to be satisfactory, a stab wound is made in the skin at a level of about 3 inches (7.5 cm) below the tip of the greater trochanter and a stainless steel pin or drill is inserted down to the femur. It is directed in a horizontal plane and upward at an inclination approximating that of the neck of the femur. In some instances the reduced hip was examined under the fluoroscope and the outline of the head and neck and trochanters of the femur were drawn on the skin with ink. This outline served as a guide in introducing the first pin. This drill or pin is one-eighth inch in diameter and 8 inches long and the end next to the point is threaded for a distance of about 1 inch. The pin is drilled into the bone for a distance of about 3 inches. Then anteroposterior and lateral roentgenograms are again made.

From the position of the first pin as determined by the roentgenograms, the second pin is inserted. If the first pin is satisfactory, the second pin is inserted parallel to it and about one-half inch above or below it depending on whether the first pin is nearer the lower or the upper border of the neck of the femur. Likewise the depth to which the pin is inserted is determined and if the first pin penetrates the head to about the desired degree an effort is made to insert the second pin to this depth. If the first pin is not deep enough or is too far into the bone due allowance is made for this in inserting the second pin and after the second pin is inserted to the desired depth the first pin is either driven in farther or withdrawn to the desired point.

If the angle or position of the first pin is unsatisfactory it is still useful as a guide and from it the

From the Department of Surgery, Washington University School of Medicine and the St. Louis City Hospital, No. 1.

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1. Knowles, F. L. Fractures of the Neck of the Femur. Wisconsin M. J. 35: 106 (Feb.) 1936.

2. Gaenslen, F. J. Subcutaneous Spike Fixation of Fresh Fractures of the Neck of the Femur. J. Bone & Joint Surg. 17: 739 (July) 1935.

3. Moore, A. T. Fracture of the Hip Joint—A New Method of Treatment. Internat. S. Digest. 19: 323-330 (June) 1935.

4. Leadbetter, G. W. A Treatment for Fracture of the Neck of the Femur. J. Bone & Joint Surg. 15: 931 (Oct.) 1933.

correction for the second pin can be made. Then, after the second pin is in position the first pin is withdrawn entirely and replaced parallel to the second pin.

When both pins are in position, final anteroposterior and lateral roentgenograms are made and if necessary the pins are either drilled in a little deeper or withdrawn to the desired point. Then the skin is pushed down around the pins as far as possible and the projecting end of each pin is clipped off with a pair of heavy bolt cutters which have been sterilized. The pressure is then released and the skin and subcutaneous tissues slip back into place leaving the projecting ends of the pins deep in the thigh. A dry dressing is placed over the two stab wounds and the patient put on a fracture bed with the limb suspended in a Hodgen splint. As a rule we have kept the patients in bed for three months and have left the pins in for from four to six months.

The principal danger associated with the insertion of the pins is that of getting them into the pelvis. It is said that one can tell by the feel when the pin enters the more dense head of the femur but this has not been our experience and on three occasions a pin was drilled in too far and had to be partly withdrawn and in the one postoperative death in our series the autopsy showed that the pin had penetrated the external iliac vein. Apparently the pin can be drilled through both articular surfaces and on into the pelvis without causing pain to the patient.

During the past eighteen months we have treated forty-six patients with fractures through the neck of the femur by the two pin method. In all but a few instances the reduction and pinning has been done by the resident in the fracture service at the time the patient came into the hospital, and the results here reported represent the work of six different surgeons. It is thus evident that our results with this method are about what an average surgeon who is qualified to

there is apparently firm bony union, that is, 45 per cent of the first twenty-nine cases have what appears to be firm bony union. If we subtract the six deaths, the incidence of bony union is 58 per cent. It is to be noted that only one of these fractures appeared to be impacted and that fractures at the base of the neck, where the neck is split off from the shaft, were treated as trochanteric fractures and are not included in this

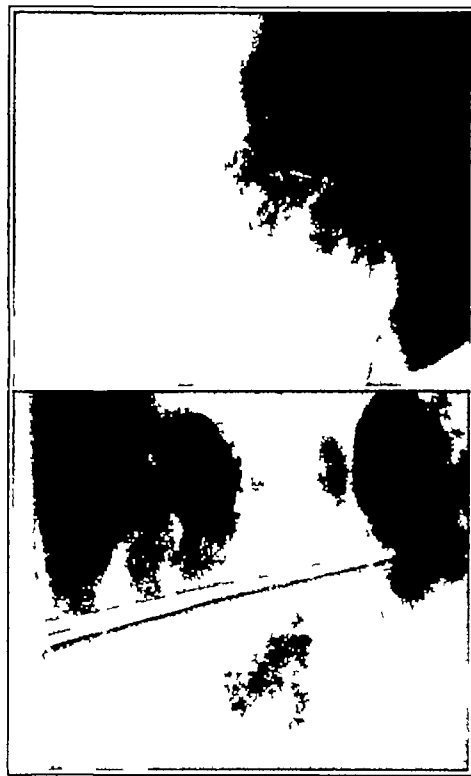


Fig 2—Above, fracture through the neck of the femur with moderate displacement. Below, same fracture after reduction and insertion of the pins. One pin has entered the pelvis and was withdrawn.

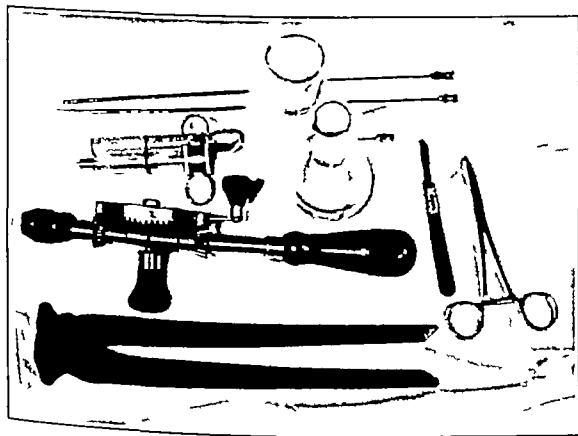


Fig 1—Material used in the two pin method. There should be added a heavy mallet for impacting the fragments before the pins are inserted.

treat major fractures might be expected to obtain and are perhaps not as good as would be those of an expert who is especially skilful in using this method.

Of the total number of patients who have been treated by this method there are thirty in whom more than eight months has elapsed since the pins were inserted and of these it has been possible to trace twenty-nine. Of these, six have died, seven have nonunion, and in three the pins are still in and the fragments in good position, thus leaving thirteen in whom

group, that is, all these were typical central or intracapsular fractures of the femur and in twenty-nine of them there was definite displacement of the fragments.

Of the remaining sixteen cases treated by the double pinning but in which insufficient time has elapsed to judge the final result, there are three deaths and two cases in which, from x-ray appearance, we expect nonunion.

In analyzing our failures we have considered the following points as being responsible: (1) poor general condition of the patient, (2) poor reduction, (3) faulty insertion of the pins, (4) failure of the pins to remain in position and (5) bending of the pins. Apparently the question of whether the head was adequately supplied with blood or not has had little to do with the success or failure of the method.

The failures due to poor general condition of the patients represent four of the six deaths in our series. In only one of these could the death of the patient be attributed to the method. The other death was due to heat stroke. Nine of the forty-six patients in whom the pins were used died. This is a mortality of 19.5 per cent while the mortality of sixty-six patients in 1933 and 1934 who had similar fractures through the neck of the femur and were treated by traction or by the large abduction plaster cast was 28.7 per cent. This mortality is largely explained by the fact that these

patients averaged 64.8 years in age and were drawn from an underprivileged portion of the population, many of whom were poorly nourished and had little to live for. However, it is to be noted that our mortality by the two pin method is considerably less than it was in those patients who were treated by traction or by immobilization in the large abduction plaster cast. During the last five year period 126, or 33 per

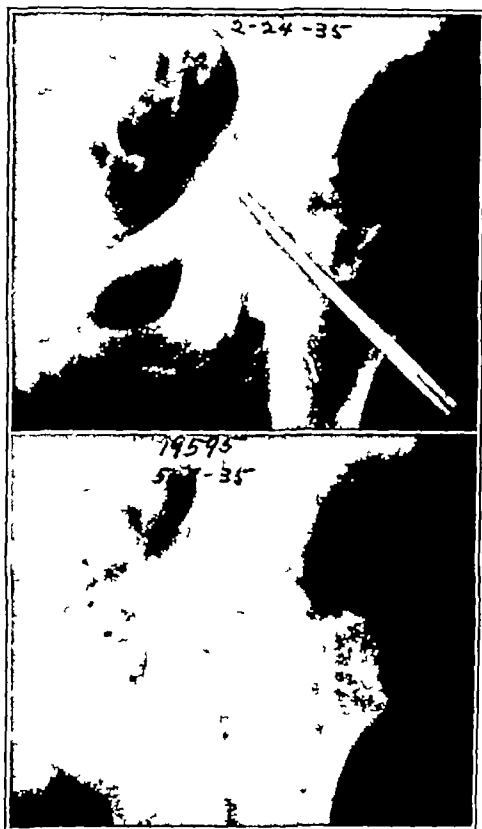


Fig 3—Above same fracture two months after reduction and pinning. Below, five and one-half months after reduction and pinning. Firm bony union with head in slight valgus position.

cent of the 380 patients with fracture of the hip, died in the hospital. The cause of death was given as bronchopneumonia seventy-six, heart disease thirty, and miscellaneous twenty. The trochanteric fractures averaged 71.7 hospital days and the fractures through the neck of the femur averaged eighty-three hospital days.

The importance of the age factor is evident when one considers the trochanteric fractures treated in the same wards during the same years. Most of these patients were treated with the Hodgen suspension and traction method and it has been our observation that patients treated by this method are relatively free from pain, can sit up or be propped up at will, and can move around in bed. Consequently we would expect the Hodgen method to result in a minimum mortality in trochanteric fractures. Yet in forty patients with trochanteric fractures in 1935 the mortality was 45 per cent and of eighty-one patients of the same type who were treated during 1933 and 1934 the mortality was 39.5 per cent. The average age of 214 patients with trochanteric fractures was 66.6 years, with an average mortality of 38.7 per cent; the average age of 166 patients with fractures through the neck of the femur was 63.8 years and the mortality 25.9 per cent; a difference of 2.4 years and of 12.8 per cent in mortality.

Contrary to popular opinion, age does not appear to have any influence on union, but it does have a very definite influence on the prognosis as regards life. The average age of the patients with trochanteric fractures who died was 73.8 years, while the average age of those who survived was 60 years. In the neck fractures the average age of those who died was 71.2 years, while the average age of those who survived was 60.9 years. In addition to the age factor it is probable that increased mortality in the trochanteric fractures is partly due to the fact that, as a rule, the trauma and pain and hemorrhage into the tissues are more severe in trochanteric fractures than in fractures through the neck of the femur.

Unsatisfactory reduction has not been a very important cause of failure of union. The question naturally arises: What is a satisfactory reduction? Theoretically, an exact anatomic reposition of the fragments is the most satisfactory reduction, and perhaps this is true, yet we believe that a better chance of union is produced when the head is placed slightly on top of the neck in a valgus position. In this position the shearing force is lessened and if the fragments are first impacted (as we are doing now) a more thorough impaction is possible than if one attempts to drive cortex into cortex, as would be necessary were an exact anatomic reduc-

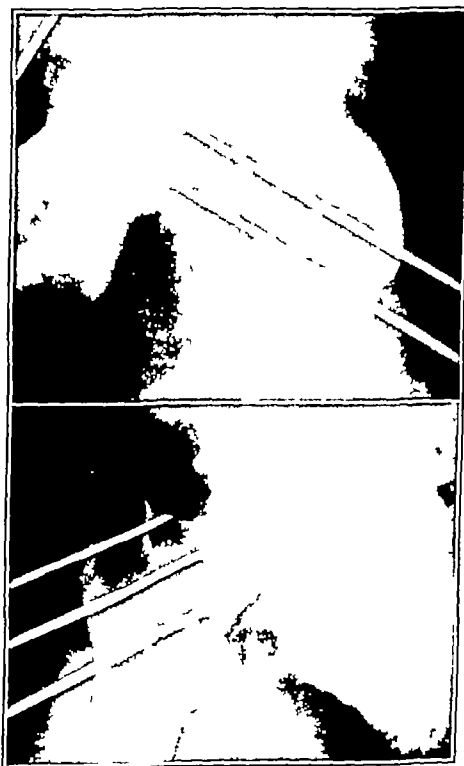


Fig 4—Above comminuted fracture through the neck of the femur after reduction and pinning. The result was bony union. Below, first pin was inserted too high. Lower pins were in satisfactory position. The result was nonunion due to bending of the pins. Pins are now threaded for only 1 inch and are stronger. Also impaction should have been done.

tion obtained. For this reason we apply strong traction throughout the Leadbetter maneuver and attempt to overreduce the displacement by pulling the distal fragment down slightly beyond its original level. On the other hand, union has been obtained in one of our cases in which the distal fragment was slightly higher than normal, thus in the slight varus position.

In no instance in which the heel-palm test was satisfactory has it been necessary to repeat the reduction. However, it is to be noted that apparently the heel-palm test is a criterion of a satisfactory lateral reduction, but not of the position of the head in the vertical plane, as with a positive heel-palm test the head may be in the valgus, normal or varus position. In our forty-six reductions the heel-palm test was positive in forty-five. In one instance it was necessary to hold the extremity forcibly in position while the pins were inserted, yet in this patient bony union occurred.

We have taken lateral roentgenograms in all our cases but have not paid much attention to them and in not a single instance have we repeated a reduction because of the lateral roentgenogram. The chief value of the lateral view is in determining the position of the first pin.

Of the seven nonunions, one is believed to be due to unsatisfactory reduction. In three instances the first pin was inserted too far (into the acetabulum or pelvis) and had to be partly withdrawn, and in one of these the pin injured the external iliac vein and caused the death of the patient. In two instances one pin did not get a satisfactory hold on both fragments. Of the seven nonunions, two are believed to be due to a final faulty position of the pins.

In the great majority of our cases, not only have the pins remained in place but their removal at the end of six months has required the exertion of considerable force. In three instances one of the pins has become loose, and two backed out and one wandered into the acetabulum. In one instance this is believed to have been a factor in the nonunion. We have encountered no instance such as that reported by van Ravenswaay⁵ in which a pin wandered into the bladder.

In two cases the pins bent sufficiently after their insertion to permit displacement of the fragments and resulted in nonunion. The other nonunion is explained by us as being due to a dead head, but we know that under proper conditions union may occur in the presence of a dead head.

CONCLUSIONS

The two pin method can be used by the average surgeon who is trained to treat major fractures.

In such hands it tends to reduce the mortality in fractures through the neck of the femur.

In our hands thirteen, or 45 per cent, of twenty-nine patients with fractures through the neck of the femur who were treated by the two pin method obtained bony union. Of the remainder, six died, seven had nonunion and in three cases the result is still doubtful.

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago. It is evident that this pinning of the fractured necks of the femurs will have to be treated with respect. When I first saw this method advocated and saw some of the immediate results, it didn't seem to me that it was mechanically sound or that it was likely to be free from danger, and as seen from this presentation there are dangers connected with these operations. To speak of the mechanical proposition. It does not seem that two pins inserted through the upper end of an elderly person's femur and into a head which probably is not any too hard will give the mechanical stability and fixation that is required in such cases unless external fixation by apparatus is used. I don't think that I should feel so safe in allowing a patient to lie in bed

with only two small pins securing the head of the femur in place. But the results reported speak for themselves. In a very fair proportion of the authors' cases a bony union has been achieved in spite of what has been done. It is a matter for consideration that these femoral necks do not unite in two or three months. It takes four months for a good bony fusion of any fracture of the neck of the femur that I myself have had anything to do with and I advise all orthopedic surgeons who operate by this method or by any method to keep patients from weight bearing for at least four months afterward. Up to this time it has seemed to me that the best fixation was the Smith-Petersen nail put in by the Johansson method, with a wire first and then the pin threaded on the wire and driven home. I am not enthusiastic about impacting these hips. The hip has been insulted sufficiently after it has been broken and after somebody has stuck a lot of wires up into it. Why insult

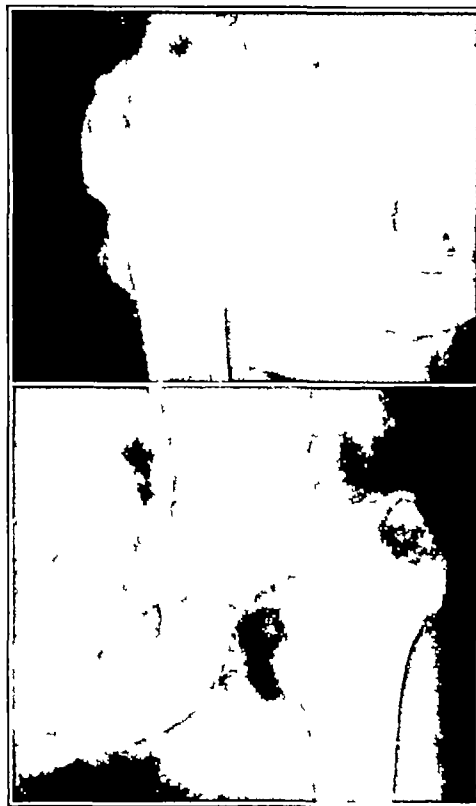


Fig 5—Above nonunion due to poor position of the pins, upper pin did not get a firm grip on the head of the femur. Below union with coxa vara. In spite of the bending of the pins bony union was obtained with moderate absorption of the head. The hip is painful.

the hip any further by beating it with a mallet? It will unite if one doesn't impact it. It will unite if one gets it in good position and keeps it there long enough, no matter what method is used. The pin fixation is simpler than the other methods but I don't think that it is as safe as a Smith-Petersen nail. I don't think that either of these types of fixation is as likely to be successful in a large majority of cases as an autogenous bone graft put up through the neck of the femur, preferably a piece of fibula. It will be necessary to wait a good many years and see more and more of the late results. I heartily congratulate the authors on their success in so many cases and on their admirable carpentry. In all the literature on the subject there is a surprising number of cases in which the pin didn't go in the right place. Why it didn't was bad carpentry, and in most cases it is due to the fact that it isn't put in low enough down below the trochanter. Years ago everybody spoke of putting pins through the trochanter. One should forget the trochanter and put the pins up through the shaft of the femur well below the trochanter and at as acute an angle as possible and every time the muscles pull on that fractured hip they will jam the fragments together without any artificial impaction and

⁵ van Ravenswaay, Alexander. Steel Pin Inserted into the Neck of the Femur Found in Bladder. *Am J Surg* 31:566 (March) 1936.

will make the bones stick together better and more firmly, by far, than if the pin is put in at a more obtuse angle

DR FRED KNOWLES, Fort Dodge, Iowa The presentation of fifty cases of internal fixation of fractures of the neck of the femur gives an excellent view of the results possible in the use of internal fixation. The results from external fixation have been so uniformly bad in such a high percentage of cases that internal fixation has received serious work from several surgeons in the United States. The teaching of Kellogg Speed that intracapsular fractures of the neck of the femur require from nine months to three years for complete bony reconstruction focused the attention of surgeons on the fact that external fixation could not possibly be maintained over this long period. Internal fixation has been advocated by Dr Albee of New York with the autogenous bone peg by Dr Smith-Petersen of Boston with the Smith-Petersen nail, by Dr Moore of Columbia, S C with the three pins, by Dr Gaenslen of Milwaukee with multiple pins, and by the method I have used for three and a half years, double parallel pinning, using one-eighth inch chrome nickel steel pins with a shoulder. The authors have changed this technic by threading the pins. Out of this comparatively early work on internal fixation undoubtedly will come more uniform technic and I believe that parts of several of these methods will be eventually adopted which can be carried out by the general surgeon. There should be several more years of work and perhaps thousands of cases studied with a better classification of the types of fractures relative to results obtained and compatible with the various ages of patients before final decision can be made as to what has proved to be the best operative technic. To the present I have operated on thirty-eight patients ranging from 50 to 89 years of age with the average age of 71 years. This has included both intracapsular and intertrochanteric fractures taking all cases as they come. The average mortality age has been 77 years and only one death at the age of 89 has been definitely due to fracture of the hip. Counting the living patients, I have had union in 92 per cent of the cases. The two points that definitely establish internal fixation in my opinion, as being far better than external fixation are a much higher percentage of union and a far greater comfort to the patient during the entire period of convalescence.

DR. FRED J. GAENSLER, Milwaukee I have observed seven or eight cases of impacted fracture of the neck with very transient and very mild support all going on to bony union and normal function. The reason why these patients get well with little or no external support is that first reduction is practically perfect second immobilization is absolute by reason of the impaction and third these patients move the extremity very early, thus insuring a good blood supply. In the spiking operation or internal fixation by any adequate method, the same principles obtain. Accurate reduction is a prime essential. If the fracture cannot be reduced properly, fixation with a Smith-Petersen or any other kind of nail is useless. If a satisfactory reduction is obtained and one succeeds in placing the spike securely and in proper position immobilization is complete and the patient is able to move the leg early, thus facilitating circulatory repair. A slight valgus deformity is not objectionable. In fact, it is rather desirable because of the mechanical advantage of more perpendicular weight bearing. The technic is not difficult if one follows definite rules. I am coming to believe that more difficulty is encountered in properly reducing the hips than in the introduction of the spikes. Staking out of the trochanter with long Keith needles is most helpful. With a little experience and careful study of the angle of the shaft and neck, the degree of anterior torsion and the length of the neck, the spikes are introduced without difficulty and are checked up with the x-rays. As far as impaction is concerned if one will try on the cadaver to impact a fracture of the neck one will be greatly surprised that it is practically impossible because the cortex of the neck is thick and hard. I have stopped trying to impact. There are dangers of course in this and in other forms of treatment of fracture of the neck. Mortality statistics run from 20 to 30 per cent. I feel that if a satisfactory reduction is obtained and if the spikes hold efficiently for three or four months the case will go on to union. The paper of Dr Key and his associates is an excellent

one which should encourage orthopedic surgeons in the use of internal fixation a method which I believe is efficient and here to stay

DR KELLOGG SPEED, Chicago It seems to me that there is some confusion existing in our minds between ways and means and results. One man talks of one pin or two pins, and another of a screw and a third of 3 or 4 cm of necessary penetration and so on. We are apparently losing our way as to what we are really after. What we want to get is an ordinary harmless way that the profession as a whole may use to care for or possibly cure fractures of the neck of the femur. Last year I had the temerity to describe these fractures as the "unsolved fracture," to the amusement of surgeons, colleagues and friends. But I still believe that the problem is unsolved and the fact is illustrated by the outburst of these papers and this very well worth while discussion of the ways and means of attempted cure. The primary requisites in treatment still remain, as most of the speakers have confessed, apposition and immobilization. In Chicago we find that quite a long immobilization is necessary. Is this method or is any method, then that we discuss here still the final method? I suggest that judgment be withheld until the last word has been said. In the meantime each one of us should study the problem along the line of a hobby or belief and eventually, perhaps years from now a proper method will be found to be employed by all caring for these fractures. I have heard discussions like this as far back as thirty-five years ago, when J B Murphy of Chicago first introduced the nailing of the hip, frequently successful often not successful.

DR J ALBERT KEY, St. Louis We tried out this method because we are not able by the Whitman plaster or by traction or by any other method to get results which are to us, satisfactory. These are not satisfactory either, but they are a lot better than we have been able to get any other way. All are familiar with the literature about 50 per cent union in intracapsular fractures treated by the Whitman method some men think it higher. I myself have never been able to get it in noninfected fractures. I know that in the City Hospital at St. Louis I couldn't find any of them that united. We are looking for a method that can be used by the ordinary man. Only two of these hips were pinned by me the first two. All the others were done by the resident, whoever happened to be on. We think at least I think that the average man who can do major fracture work can have better luck in putting in these two pins than he can in putting on a Whitman plaster. A Whitman plaster sounds simple but to put it on and keep it on a patient for four months and have the patient survive is a very difficult thing. As to the insult of impaction we don't insult after we put the pins in. We think that impaction should be done first and then after the patients have survived the impaction we put the pins in. Our mortality has been cut down about 35 per cent by this method in the same hospital. As to the question of reduction I don't think reduction is so important if one gets the fragments together. It isn't necessary to have anatomic reduction. In fact as I stated here, I would much rather not have an anatomic reduction. I don't believe in the ring that Dr Knowles has mentioned because I don't know how long a pin is going to be necessary. I have to drill it in until I can see in the roentgenogram how far it is. With regard to the pin backing out through the skin I had that happen once. The only difference between his patient and mine was that mine died. His apparently got well. When they come through the skin now we take them out.

Nature of Thirst—If we survey the foregoing evidence as a whole we are led to the rather banal conclusion that thirst is what it seems to be—a disagreeable sensation due to drying of the mucous membranes of the fauces and pharynx. The real interest in localizing the origin of thirst at the back of the mouth is found in the relation of the salivary glands to that area. The area set where the moving air tends to dry it is normally kept moist by secreted saliva—a liquid which is almost pure water. If the salivary glands do not have water supplied to them they cannot function the area dries and we experience thirst.—Cannon W B. *Digestion and Health*. New York W W Norton & Co., Inc 1936

CHOLANGIOGRAPHIC DEMONSTRATION
OF BILIARY DYSSYNERGIAAND OTHER OBSTRUCTIVE LESIONS OF THE
GALLBLADDER AND BILE DUCTS

R RUSSELL BEST MD

AND

N FREDERICK HICKEN MD

OMAHA

Although during the last fifteen years definite advances have been made in the diagnosis of lesions of the biliary tract, we not infrequently are unable to appreciate the relation of the common bile duct to the patient's complaint. It is true that biliary surgery gives very gratifying results in most instances, but it is that group of patients whose response has not been entirely satisfactory which concerns us. Cholecystograms, as sponsored by Graham and Cole,¹ furnish valuable evidence regarding the gallbladder, but they are of little value in disturbances of the common bile duct. Elsewhere in the body, tubular organs can be injected with radiopaque solutions that graphically outline such organic changes as tumors, stones, strictures and inflammation and depict any variation in activity or motility resulting from functional disturbances. It is our purpose in this paper to present clinical and x-ray evidence of spasm of the lower end of the common duct, which we have termed biliary dyssynergia, and to describe the method of diagnosing other obstructive lesions of the extrahepatic bile ducts by injecting opaque substances into the biliary tract. We also offer some experiences in the management of these conditions.

For the past two years, we have been visualizing the biliary tract by injecting radiopaque fluids into the common duct during operation. This method has been called immediate cholangiography. The injection of radiopaque substances postoperatively, through catheters, tubes or fistulas, has been designated delayed cholangiography.

TECHNIC

A satisfactory contrast medium produces a clear outline and is nonirritating to the tissues. After experimenting with many contrast solutions we have found Ipoiodine, thorium dioxide sol and hippuran to be the most suitable, however, each of these has its advantages and disadvantages. These solutions must be absolutely sterile and must be warmed to 120 F at the time of injection.

Lipoiodine-Ciba is a nonirritating iodized oil which apparently exerts a soothing, therapeutic influence in the common duct. We have not hesitated to use it in the face of biliary infection complicated by high temperature. Being an oily solution, lipoiodine is very viscous and some difficulty may be encountered in injecting it into the biliary tract through a small bore needle, as is necessary in making an immediate cholangiogram. If a large caliber needle is used, the oil seeps out the puncture wound and infiltrates the extraductal tissues, thus giving a hazy, indefinite cholangiogram. After considerable experience we have concluded that this solution is so dense that the smaller stones in the common duct may be obscured.

Thorium dioxide sol is a labile solution and gives an excellent pattern of the bile ducts. Some authors have asserted that it has carcinogenic properties but to date no authentic report of this occurrence has been made, even though it has been used intravenously as a diagnostic aid in hepatic, splenic and vascular lesions in a rather large series of cases. We believe that this fear is unwarranted and have used thorium dioxide sol freely.

Hippuran is a 48 per cent aqueous solution of organic iodide and has proved to be a very satisfactory cholangiographic medium.

IMMEDIATE CHOLANGIOGRAPHY

In 1932 Mirizzi² suggested that the common bile duct could be visualized at the operating table by injecting it with radiopaque substances. During the past



Fig 1—A normal immediate cholangiogram taken at the operating table

two years we have developed several methods of obtaining satisfactory cholangiograms, and our experience indicates that the site for injection may vary with the case.

Site of Injection During Operation Without Sacrificing the Gallbladder—1 The most direct method consists of injecting about 20 cc of the radiopaque solution directly into the common duct, which has been isolated and steadied with Allis clamps or two small sutures. A 22-gage needle on a "Lok" syringe is used. The clamps are then removed and gauze is placed lightly against the puncture wound. If the duct is dilated it may be necessary to aspirate its contents before the injection is made.

2 Another method is the injecting of 40 cc or more of the contrast medium directly into the gallbladder.

2 Mirizzi P L Cholangiografi durante las operaciones de las vias biliares. Bol. y trab. de la Soc. de cir. de Buenos Aires 16: 1133 1161 (Oct 5) 1932

From the Departments of Surgery and Anatomy University of Nebraska School of Medicine
Read before the Section on Surgery General and Abdominal at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo. May 13 1936
1 Graham E A and Cole, W H Roentgenographic Examination of Gallbladder. New Method Utilizing Intravenous Injection of Tetra bromphenolphthalein J. A. M. A. 82: 613 614 (Feb 23) 1924

after the bile has been aspirated. A clamp or suture seals the puncture wound. This method is unsatisfactory if the cystic duct is occluded.

Site of Injection at Operating Table with Sacrifice of the Gallbladder—1 A very satisfactory technic is to clamp and divide the cystic duct, remove the clamp, and inject about 20 cc of contrast medium into the stump of the cystic duct with a small cannula or blunt needle. This method is most useful if the common duct is thickened and the cystic duct is dilated.

2 Not infrequently the cystic duct is very small and cannot be probed successfully. In this event the cystic duct is ligated, and injection is made into the common duct, which has been steadied with Allis clamps or fine sutures.

3 In some instances the cystic duct is isolated and the neck of the gallbladder is exposed and clamped in such a manner that a needle can be inserted below this point. The clamp prevents the contrast medium from

tures, angulation or spasm of the common duct. In all cases in which tubes or catheters have been left in the gallbladder or common duct, between 20 and 50 cc of contrast medium is injected on about the third post-operative day, and these injections are repeated as necessary.

STUDIES IN IMMEDIATE CHOLANGIOGRAPHY

1 *As an Aid in Diagnosing Elusive Common Duct Stones*—Lahey³ and Clute⁴ have definitely demonstrated that the incidence of common duct stones in cholelithiasis has almost tripled since they have increased their explorations of the common duct rather than depending on palpation. Experience has proved that unnecessary choledochostomies may be avoided by making roentgenographic visualizations of the common duct at the operating table (fig 1). This method has revealed the presence of stones when palpatory evidence was negative (fig 2).

CASE 1—Mrs. S., aged 45, had repeated attacks of pain in the right upper quadrant referred to the right shoulder and associated with nausea, gas and an aversion to fatty foods. She had never been jaundiced nor had the pain necessitated morphine. Physical examination revealed obesity with tenderness over the gallbladder region. The gallbladder did not concentrate the dye and the icteric index was normal. At operation the gallbladder wall was thickened and several stones were palpable. The common duct appeared about normal size, no stones were palpable and the head of the pancreas felt normal. A cholangiogram was made at the operating table by injecting 20 cc. of thorium dioxide sol into the stump of the cystic duct. The film revealed a small negative shadow near the lower end of the common duct. Choledochostomy disclosed a single small stone.

2 *As an Aid in Diagnosis of Pancreatitis or Tumors of the Head of the Pancreas*—We believe that these give rather definite pictures when they compress the common duct although the differentiation from spastic closure of the lower end of the common duct would prove difficult at times.

CASE 2—Mrs. S., aged 68, had complained of indigestion and intolerance for greasy foods for many years. About two months before admission she began having pain in the right upper quadrant, which radiated to the shoulder. During the last two weeks she had suffered from nausea, vomiting and jaundice associated with clay colored stools. On physical examination the patient was found to be obese, jaundiced, dehydrated, acutely ill and very tender over the right upper quadrant, with liver margin down about three fingerbreadths. After ten days of preoperative observation and preparation a cholangiogram at the operating table revealed a dilated common duct with an obstruction at its lower end. No evidence of stone was found and the picture was not typical of stricture or spasm. The cystic duct was patent. A cholecystogastrostomy was carried out.

3 *To Determine Patency of the Cystic Duct*—We have assumed that certain types of bile in the gallbladder were significant of a patent cystic duct and, if a cholecystogastrostomy was indicated, one had little fear of an inadequate short-circuiting operation. However, on two occasions we have proved that the contrast medium did not reach the hepatic or common bile duct, although we felt that we were dealing with a patent cystic duct. This may be one explanation for the high mortality in such operations in that the procedure does not decompress the biliary system and the

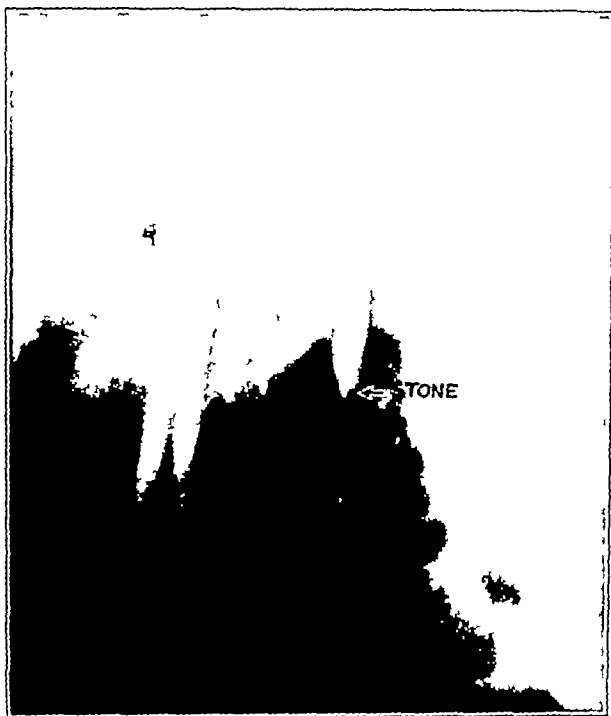


Fig. 2—An immediate cholangiogram depicting a small stone at the lower end of the common duct which had not been palpable.

invading the gallbladder. After the needle has been withdrawn, the puncture wound is momentarily clamped to prevent leakage.

X-Ray Technic—Before the operation is begun a wooden tunnel containing a 14 by 17 inch film is placed beneath the patient. At times a cystoscopic table has been used. After the contrast medium has been injected all clamps are removed from the wound, including the towel clips at the upper angle of the incision. A large sterile sheet is then thrown over the operative field, the operator and assistants step aside, the portable x-ray machine is wheeled into place and the picture is taken. The film is immediately developed and interpreted and the operation is then continued.

DELAYED CHOLANGIOGRAPHY

We have found repeated check-up cholangiograms definitely valuable in ascertaining why biliary fistulas have failed to close and in demonstrating stones stric-

³ Lahey, F. H. The Incidence and Management of Stones in the Common and Hepatic Ducts. *Tr. Am. S. A.* 51:164-169, 1933.

⁴ Clute, H. M. Common Duct Stones. *J. A. M. A.* 95:1563-1570 (Nov. 22) 1930.

patient has to carry the insult of operation as well as the original pathologic condition (fig 3)

CASE 3—Mr B, aged 65, presented a history of vague subcostal pain following meals for one year. He became nauseated and vomited every evening, was slightly jaundiced, and lost 40 pounds (18 kg) during this time. Physical examination revealed general abdominal tenderness and a mass in the epigastrium. After ten days of preoperative observation and preparation, a mass the size of an egg was found at the lower end of a greatly dilated common duct. Heavy dark bile was aspirated from the distended gallbladder, about 30 cc of lipiodine was injected, and an immediate cholangiogram revealed the cystic duct to be occluded. However, a cholecystogastrostomy was done in the hope that our cholangiogram was in error or that some valvular obstruction or edema in the region of the cystic duct would be released after decompression of the gallbladder. At autopsy ten days later, the cystic duct was still occluded.

4 *The Effect of Spinal Anesthesia on the Chole-
dochal Sphincter*—In our early investigations we believed that the sphincter was relaxed under spinal anesthesia, but fortunately we were wrong. If the sphincter relaxed it would be impossible to obtain a satisfactory immediate cholangiogram, because the contrast medium would immediately enter the duodenum. Its contraction under spinal anesthesia is well demonstrated in practically all immediate cholangiograms.

STUDIES IN DELAYED CHOLANGIOGRAPHY

1 *Demonstration of biliary dyssynergia*. Our histologic studies reveal practically no muscle tissue in the cystic, hepatic or common ducts. At the lower end of the common duct, however, there exists a concentration of muscle tissue termed the sphincter of Oddi. This sphincter, like those of the stomach and colon, has an innervation derived from the sympathetic and parasympathetic systems, and it is probably subject to similar disorders of function, in particular, spasm or hypertonicity. For some years authors have described gallbladder colic existing without stone or infection and have frequently reported cases of jaundice with no apparent obstruction to account for the dilated common duct.

In 1887 Oddi,⁵ in his original description of this choledochal sphincter, was of the opinion that spasm of this sphincter of the ampulla might be the cause of biliary colic or icterus in some patients. The work of Meltzer⁶ and Lyon⁷ with magnesium sulfate on the duodenal mucosa also suggests the occurrence of this spastic phenomenon. In 1922 John Berg,⁸ a Swedish surgeon interested in biliary colic without stone or infection, proposed that functional disorders of the biliary passage might be the cause of biliary stasis and supported his contention by observations of hypertrophy of the muscle at the lower end of the common duct. Nuboer⁹ and Newman¹⁰ have also observed this hypertrophy. Westphal,¹¹ in 1923, went so far as to

classify disorders of motility of the biliary tract into the hyperkinetic and atonic types. In 1933 Ivy, Voegtlin and Greengard¹² further substantiated the existence of this phenomenon by a series of experiments on human beings. They found that an injection of secretin-cholecystokinin was generally followed by a copious flow of pancreatic juice and bile which could be recovered through a duodenal tube. In three out of nineteen normal subjects studied, bile was not recovered after the injection and the patients suffered right hypochondrial distress, which became so severe that relief was sought. The introduction of magnesium sulfate into the duodenum resulted in immediate alleviation of the distress and in a few minutes bile was recovered from the duodenum, thus indicating that the choledochal sphincter had relaxed.

These experiments suggested that the existence of this sphincterismus of spastic dyssynergia could be con-



Fig 3—Carcinoma of pancreas. Immediate cholangiogram also reveals a cystic duct obstruction. Cholecystogastrostomy proved to be of no value.

firmed by roentgenographic visualization of the common duct. Therefore, in a series of gallbladder cases, postoperative injections of radiopaque solutions were made through a small catheter left in the cystic duct. Similar studies were instituted in all cases with common duct catheters, T tubes or fistulas. We have found spastic biliary dyssynergia to exist in 15 per cent of the patients in our series of seventy-five. This can best be exemplified by presenting actual cases (fig 4).

CASE 4—Mrs M, aged 52, experienced typical gallbladder distress for ten years with several attacks of severe colic but no jaundice. Examination was negative except for slight tenderness in the right subcostal area. In cholecystographic studies the gallbladder appeared distended and contained several small stones, and the wall was moderately thickened. The wall of the common duct was also slightly thickened but there was

5 Oddi, Ruggero. D'une disposition à sphincter spéciale de l'ouverture du canal cholédoque. Arch ital de biol 8: 317-322, 1887. Sulla tonicità dello sfintere del coledoco. Arch per le sc med 12: 333-339, 1888.
6 Meltzer, S. J. Diseases of the Bile Ducts and Gallbladder. Am J M. Sc. 153: 469 (April) 1917.
7 Lyon, B. B. V. Diagnosis and Treatment of Diseases of Gallbladder and Biliary Ducts. J A M A 73: 980 (Sept 27) 1919.
8 Berg, John. Studien über die Funktion der Gallenwege unter normalen und gewissen abnormen Verhältnissen. Acta chir scandinav suppl. 2, pp 1-185, 1922.
9 Nuboer, J. F. Studien über das extrahepatische Gallenwegssystem. Frankfurt Ztschr f Path. 41: 454-511, 1931.
10 Newman, Charles. Physiology of Gallbladder and Its Functional Abnormalities. Lancet 1: 785 (April 15), 841 (April 22), 896 (April 29) 1933.
11 Westphal, K. Muskelfunktion, Nervensystem und Pathologie der Gallenwege. I. Untersuchungen über den Schmerz anfall der Gallenwege und seine ausstrahlenden Reflexe. Ztschr f klin Med 96: 22-150 (Jan) 1923.

12 Ivy, A. C., Voegtlin, W. L., and Greengard, Harry. Physiology of Common Bile Duct. Singular Observation. J A M A 100: 1319-1320 (April 29) 1933.

no evidence of gross dilatation, stone or neoplasm. The head of the pancreas was normal. Exploration of the common duct released a thick, dark brown, tenacious bile laden with flakes of biliary pigment. Examination with scoop and probes demonstrated a pseudo obstruction in the region of the sphincter. On stronger pressure the probe suddenly slipped into the duodenum, indicating that some impediment had been overcome. Twenty-four hours following operation, 40 cc of lipiodine was injected into the common duct and the roentgenogram revealed a pronounced dilatation of the entire biliary tree with a cone-shaped narrowing at the lower end of the common duct. There was no evidence of stone or stricture. Twenty-five minutes later the apparent spasm was still present for the lipiodine had not escaped from the biliary tract. In three hours there was a slight trickle of oil into the duodenum. At forty-eight hours the biliary tract was practically free from the contrast medium. During the latter part of the injection, and as the tube was clamped the patient complained of distress similar to her gallbladder attacks.

CASE 5—Mrs. W., aged 41, had had typical gallbladder disease for five years, associated with severe colicky pains and deep jaundice. She was operated on and a gallbladder filled with pea sized stones was removed, twenty-two pea-sized stones were also removed from the hepatic and common ducts. Within

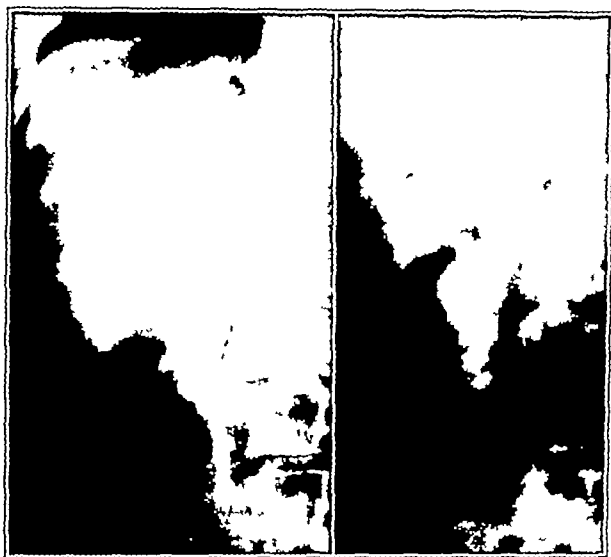


Fig. 4—A delayed cholangiogram depicting spasm of the lower end of common duct (left). A 1/100 glyceryl trinitrate tablet was given and five minutes later spasm had disappeared (right).

four months the attacks of colic jaundice and high temperature recurred. Eighteen months later she submitted to a second operation. When the common duct was opened thick pus was encountered and a large soft calculus was removed. The lower orifice of the duct was patent and a T tube was inserted. Postoperative hemorrhage into the wound was a troublesome factor. On the tenth postoperative day the biliary discharge had a bloody tinge and on the twelfth day the T tube had become blocked; the stools were acholic and the jaundice was increasing. A few days later at a third operation, a blood clot was removed from the common duct. The lower end of the duct was definitely patent at this time. Following this procedure the stools remained acholic and there was a free flow of bile through the common duct catheter and later through the fistula. Clamping the catheter and packing the fistula did not force bile into the duodenum and always caused severe distress within a few hours. Antispasmodic drugs did not alter the situation and after forty-five days of a complete biliary fistula and acholic stools a cholangiographic study with lipiodine evinced a definite obstruction at the lower end of the common duct not suggestive of stone but rather typical of choledochal sphincter spasm. A roentgenogram taken three minutes later showed a few drops of oil in the duodenum and a third roentgenogram taken in twenty minutes disclosed that the lipiodine had escaped from the common duct and was within the jejunum.

Within twenty-four hours the fistula was closed, the stools were of normal color, and now, more than a year later, the patient has had no recurrence of biliary obstruction.

It has been very noticeable in our cases that the spasm of the sphincter of Oddi was in no way correlated with the degree or type of pathologic condition of the gallbladder or common duct. One may venture that in some instances spasm is the prelude of biliary or pancreatic disease and is followed by stasis and infection. Again, in those cases in which the lower end of the common duct is atonic and the contrast medium immediately passes into the duodenum, regurgitation of infectious duodenal contents into the common duct might well be the source of biliary or pancreatic disease. Experiments by Brendolan¹³ show that section of the sphincter of Oddi in dogs frequently results in ascending biliary infection.

The hypertonic type of dyssynergia occasions pain because of increasing pressure. This was frequently demonstrated during injection of the opaque medium against the spastic sphincter. Patients with atonic dyssynergia did not complain of distress.

2 Demonstration of the cause of persistent biliary fistulas

CASE 6—Mr. B., aged 56, had a cholecystostomy performed four months previously at which several small stones had been removed from the gallbladder. There had been intermittent drainage from the site of operation, and, when it was not draining, colic and epigastric pain ensued. This sinus was injected with 60 cc of lipiodine and a roentgenogram revealed an irregular spiral-shaped shadow obstructing the cystic duct. No oil reached the common duct. Here was rather conclusive evidence that an obstruction at the cystic duct prevented the gallbladder from emptying. Operation revealed a well organized bile-stained mucous plug occluding the cystic duct.

Injections of other persistent biliary fistulas have revealed stones remaining in the cystic duct or draining sinus, strictures and spasm of the sphincter of Oddi.

3 Aid in diagnosis of remaining stones, mucous plugs and the like

CASE 7—Mrs. K., aged 35, suffered attacks of pain in the right upper quadrant radiating to the scapula, severe enough to require morphine, and associated with gas, nausea and vomiting. One month previous to admission she had her first attack of jaundice. Physical examination revealed marked jaundice with tenderness and rigidity in the right upper quadrant. After a week's preoperative preparation and study the gallbladder was found to be a sclerotic mass adherent to the common duct with a fistulous communication existing between them. A stone the size of a marble was removed from the common duct and catheters were fixed into both the hepatic and the common duct. A cholangiogram taken on the fifth postoperative day was negative. On the eighteenth postoperative day there was a negative shadow in the region of the ampulla which on a second cholangiogram a few hours later was shown to be movable within the common duct. This was interpreted as a mucous plug or stone and the patient was forewarned. She returned home feeling well but one month later had an attack of terrific pain in the upper part of the abdomen. A year has now passed and she has had no further trouble and it is possible that she passed this foreign body during the attack.

4 To ascertain patency or deformity of the common duct following operative procedures or injuries

CASE 8—Mrs. G., aged 29, accidentally had the common duct severed by a surgeon during a cholecystectomy. This was repaired over a T tube and we were permitted to make follow-up cholangiograms which demonstrated that the radiopaque substances passed freely into the duodenum and after removal of the tube common duct continuity was present.

13. Brendolan, G. The Immediate and Late Effects of the Section of the Sphincter of Oddi. *Arch. ital. di chir.* 40: 529, 1935.

5 As an aid in determining the degree of cholangiectasia and time for removal of common duct catheter We believe that this is most important in all cases in which common duct drainage has been established, for until the biliary radicles and ducts have somewhat approached normal size the tubes should not be removed. We have found irrigation with warm physiologic solution of sodium chloride or warm olive oil most beneficial. Warm lipiodine seems to have some therapeutic value also.

THERAPEUTIC CONSIDERATIONS

During the injection of the radiopaque substances in those cases in which spasm of the sphincter of Oddi existed, the pain experienced by the patient was typical of the biliary distress or colic existing before operation. On some occasions, after the injection of the warm oily contrast medium through T tubes or catheters, the sphincter relaxed almost immediately and at other times the spastic condition was not relieved. In case 5, in which spasm was apparently the cause of acholic stools and a persistent draining biliary fistula for a period of forty five days, the spasm was relieved by instillation of warm lipiodine on the choledochal side of the sphincter and now, eighteen months later, it has not recurred. Of late, in all cases presenting biliary catheters or fistulas, irrigation with warm olive oil or saline solution is done and when the status of the sphincter is checked up, lipiodine is used. For ruling out the presence of a foreign body in the common duct, thorium dioxide sol or hippuran is substituted for reasons stated previously. Attempts are also made to relax the spastic sphincter with atropine, belladonna or magnesium sulfate instilled through the duodenal tube, but not infrequently these drugs fail. We also use olive oil or pure cream night and morning, as suggested by Ivy. A combination of these treatments may also relieve the common duct of any foreign body such as mucous plugs and small stones.

In our first experiments we were at a loss to understand why morphine and atropine did not achieve the desired relaxation of the sphincter except in isolated instances.

At this time we began more enthusiastic treatment of some of our gallbladder cases in which operation had been done some years before with not entirely satisfactory results. We found that the foregoing therapeutic measures produced startling improvements in some instances, while in others the desired benefits were not obtained. Of course in these cases we were not sure whether we were dealing with spasm, stone, mucous plugs or stricture of the common duct. One man was also subject to angina pectoris and during some of these attacks felt that he was having pain over the gallbladder region which was quite similar to the distress he had before operation. He had used glyceryl trinitrate tablets for these attacks and volunteered the information that the soreness over the gallbladder region was also greatly relieved by the glyceryl trinitrate. These tablets were then prescribed to several other patients, who seemed to get partial or complete relief. This appeared only empirical, but in the next two cases of spastic biliary dyssynergia that we could demonstrate with cholangiograms we were able to prove that $\frac{1}{100}$ grain (0.0006 Gm.) glyceryl trinitrate tablets by mouth relaxed the spastic sphincter of Oddi (fig 4). If we clamped off the drainage catheter or packed the fistula so that distress was present, immediate relief was usually obtained.

SURGICAL CONSIDERATIONS

If drugs or diet can be used to control the spastic state of the choledochal sphincter without too much inconvenience to the patient, such surgical procedures as choledochoduodenostomy or sphincterostomy are not indicated. It is perfectly plausible, however, that surgery for spastic biliary dyssynergia may some day be part of the management of certain of these cases. Some type of neurectomy may also prove advantageous.

SUMMARY

1 Spastic biliary dyssynergia has been demonstrated by means of cholangiograms and may be considered a definite clinical entity.

2 Glyceryl trinitrate tablets, magnesium sulfate, atropine, belladonna, cream, olive oil and various oily radiopaque substances have very evident therapeutic value at times in spastic dyssynergia.

3 When possible, postoperative irrigation of the common duct with oils and saline solution is of value.

4 Immediate cholangiograms are a definite aid in diagnosis and may prevent complicating circumstances which arise from incision and exploration of the common duct. The status of the cystic duct can also be ascertained.

5 Delayed cholangiograms are an aid in determining the status of the choledochal sphincter, the presence of overlooked stones, stricture and tumor, and the presence of pancreatitis or tumor of the pancreas, and also help determine when sufficient time has elapsed for biliary drainage.

6 The choledochal sphincter is as a rule in a contracted state under spinal anesthesia.

107 South Seventeenth Street

ABSTRACT OF DISCUSSION

DR. FRANK H. LAHEY, Boston. Up to 1926 I was unhappy because of the number of stones in the common duct which were being overlooked in our clinic. I therefore advocated further investigation of common ducts. Up to 1926 we had operated on 619 gallbladders, opened the common duct in 15 per cent and found stones in 8 per cent. Up to last year we had operated on 2,000 gallbladders, opened the common duct in 44 per cent, and in the last third of the cases found stones in 18 per cent of the cases. It thus becomes obvious that previous to 1926 we were leaving a stone in the common duct in probably one in every ten patients on whom we operated. It is therefore of great interest to hear this paper. Any improvement in the method of distinguishing the possible presence of common duct stones is of great value. When one realizes that in 39 per cent of the cases in which we found stones in the common duct no jaundice was present at the time, or had been present in the history, one must admit that no dependence can be placed on some of the past criteria for the presence of stones in the common duct. When one leaves behind a stone in the common duct it is probable that one has left the stone that is causing the symptoms, and certainly the stone that is most likely to bring about a fatality. For this reason, I feel sure that stones in the common duct should be investigated more than has been done in the past. I have not felt the need for this method of investigation. Dr. Charles G. Mixer at the Beth Israel Hospital in Boston has employed it, and thinks well of it. What is needed is a definite set of criteria as to when common ducts should be investigated, and ours are these: jaundice, or history of jaundice with cholelithiasis, a contracted gallbladder, a thickened common duct or a dilated common duct, a lump that is in any way a possible stone, a thickened head of the pancreas. It does not add to the mortality to open the common duct. It is necessary to provide conditions that will permit those stones to pass on. For that reason I have welcomed the appearance of the Bakes sphincter dilators. They run up to 14 mm in diameter and can be passed through the sphincter of Oddi. It is not

safe to dilate them to 14 mm. I have reported the occurrence of two ascending gas bacillus infections in such cases, but it is safe to dilate the sphincter up to 9 mm and then to wash any small stone down into the duodenum. The important fact to remember concerning cholelithiasis is that if one finds 18 per cent proved common duct stones in cholelithiasis, one must admit that patients have not been operated on early enough because common duct obstruction is the result of long standing cholelithiasis. What is necessary is to educate medical men not to carry their cases of cholelithiasis through repeated attacks but to submit them to operation earlier while the stones are still in the gallbladder. Then there will be a lower mortality and better end results.

DR. WALTIAN WALTERS, Rochester, Minn. Mirizzi, Bartlett, Thiessen and I and Best and his associates have demonstrated the value of a study of the physiology of the common bile duct using the visual methods of fluoroscopy and roentgenography. Our interest in the method was stimulated by Mirizzi's interesting monograph "La cholécystectomie sans drainage (cholecystectomy ideale)," published in 1933. After using the method at the operating table on a few occasions we discarded it as being too time consuming. It did not yield sufficient additional information beyond that which could be obtained from the anatomic and pathologic changes to warrant its continuation. However, its use subsequent to operation has been of inestimable value in cases in which the common bile duct has been opened and explored and closed around a small T-tube. Two and a half weeks after operation the T-tube is injected with 10 cc of brominol, which is opaque to roentgen rays, and a roentgenogram is taken immediately. Ten minutes later two additional roentgenograms are made. Although, fortunately, to date we have not found any cases in which it would appear that a stone persisted in the common bile duct, we have found that in some cases of pancreatitis there was persistent narrowing of the lower end of the common bile duct interfering with proper drainage of bile into the duodenum, and that in an occasional case reflux into the duct of Wirsung could be demonstrated. In some cases, also, a partial stenosis or spasm in the region of the sphincter of Oddi was causing stasis within the common bile duct. Space permits only the briefest reference to this problem of pancreatitis and malfunction of the sphincter of Oddi. In regard to the pancreatitis, if persistent narrowing of the common bile duct continues after a period of from six to eight weeks of T-tube drainage (at which time the T-tube would have ordinarily been removed), and the cholechochograms show continued retardation in the emptying time of the common duct, the T-tube should be left in for an additional period until complete subsidence of the stasis demonstrable roentgenographically, occurs. In this particular type of case it seems to me that the practical value of cholechochograms is apparent.

Mary Baker Eddy and Dr Francis Lieber's Manuscript.—The newly discovered Source Document, a deeply thoughtful philosophic discussion of Hegelianism by a German-American, at last brings to the light of day what a discerning scholarship should have detected long ago—namely that Mrs Eddy was the mouthpiece, however distorted for the ghost of the distinguished German philosopher Georg Wilhelm Friedrich Hegel. The contention is not that she plagiarized in all her writings, for a considerable part of what she produced bears her own indubitable mark. But the fact is irrefutable that the chief doctrinal points, the main ideas in *Science and Health* including the major portion of the 'Scientific Statement of Being' are appropriated verbatim from this antecedent statement the newly discovered Source Document. This remarkable essay from which Mrs. Eddy so extensively appropriated proves to be a manuscript of 8,200 words, comprising a philosophical treatise on Hegelian Metaphysics by the justly celebrated man of letters Dr Francis Lieber. The Lieber Manuscript gains distinction as one of the most notable documents in the history of American letters for Lieber's summation of Hegel's philosophy became none other than the basis of *Science and Health*—Haushalter W M Mrs Eddy Purlouns From Hegel Boston A A Beauchamp 1936

SEGMENTAL NEURALGIA IN CHILDHOOD SIMULATING VISCERAL DISEASE

JOHN HART DAVIS, MD
CLEVELAND

In the past five years I have observed in a group of 250 children the various manifestations of a pain syndrome that seems to be commonly misinterpreted, most commonly as an evidence of visceral disease. I have seen it called acute appendicitis, chronic appendicitis, renal colic, ureteral stones, gallstones, pleurisy, colitis, and the like, without any subsequent developments to warrant these diagnoses. I have seen it confused, in certain of its aspects, with arthritis, bursitis, tenosynovitis and other types of pain affecting the extremities.

The fact that the distribution of this pain was always segmental would seem to divorce these cases from a serious consideration of visceral disorder. That very fact, on the contrary, is commonly interpreted as irrefutable evidence of its visceral origin, especially by those who have been trained in the infallibility of the viscerosensory reflex.

Since my own observations in these children failed to establish any evidence of visceral disease, and since all of them recovered without surgical intervention, I began to cast about for an explanation of segmental pain that would apply more consistently than the classic theory of Mackenzie¹ and Head.²

I think I have arrived at such an explanation, an explanation based on a perfectly simple mechanism and quite in harmony with the most modern concepts of disease. It will be well, in attempting to build up this theory, to bring out the details of history, symptoms, examination, treatment and results in this group of children as I have observed them.

GENERAL DESCRIPTION

The material for this study was derived from the roster of the Cleveland public schools and from the clinics of the University Hospital. It includes those children, more than 250 in number, who voluntarily sought out the doctor because of pain, the prime feature of the disorder. The age range of the group was from 6 to 16 years. The great majority of the children so affected were between the ages of 12 and 16 years. Most of them were boys, but largely because there were more boys than girls available for observation. In mixed groups there seemed to be no greater incidence in the one sex than in the other.

They were recruited largely from the underprivileged and lower middle classes, yet to casual inspection they seldom were undernourished. None of the children gave a significant history or evidence of vitamin deficiency or allergic disturbance. In fact, there was nothing unusual about any of them that could not be duplicated in their fellows who were unaffected.

The history, with respect to the onset of symptoms, is especially significant, since it brings to light a second important feature of the disorder, i e, infection. Fully

From the Department of Pediatrics Western Reserve University School of Medicine.

Read before the Section on Pediatrics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

¹ Mackenzie, James. Associated Pain of Visceral Disease. *M Chronicle* 16: 295, 1892. Symptoms and Their Interpretations. London: Shaw and Sons, 1909.

² Head, Henry. A Disturbance of Sensation with Special Reference to the Pain of Visceral Disease. *Brain* 10: 1122, 1892.

90 per cent of the group had had recently an infection of the upper respiratory tract, varying in severity from a simple cold to influenza with prostration. In the majority, the infection seems actually to have been mild. Not infrequently it accompanied the onset of pain but more often preceded it by one to two weeks. The seasonal incidence of the disorder has corresponded consistently with the "cold season," and the peak incidence with that of cold epidemics. The remainder of the group (10 per cent) was divided about equally between those children who had had some trauma previously and those whose history was not significant in any way. Curiously, however, these patients came to my attention only during the time when the disorder was prevalent generally.

The characteristic symptomatology always featured pain which was variously described as "tingling," "sticking," "sharp" or "burning." It often was mild in fact so mild that it might not have come to a doctor's attention except in a free dispensary. Just as often it was severe, paroxysmal or lancinating, a source of genuine discomfort to the patient and a problem in differential diagnosis to the attending physician.

The pain commonly was localized in the anterior abdominal wall (75 per cent) in the area supplied by the ninth, tenth, eleventh and twelfth dorsal segments. In a much smaller group (10 per cent) it was limited to the thoracic wall in the distribution of the fourth to the eighth dorsal segments. In the remainder of the group (15 per cent) it was distributed in the more bizarre areas supplied by the cervical, upper dorsal, lumbar and sacral segments. In 60 per cent of all the cases the pain was unilateral, in the remaining 40 per cent it was bilateral.

In a few of these cases, vomiting occurred as an initial feature of the disorder accompanying the onset of the pain. None of the patients complained of headache or dizziness. There was no fever except in the preliminary "cold" phase, and no motor disturbances or weakness other than the natural limitations of movement resulting from pain.

The clinical signs consisted of cutaneous hyperesthesia and hyperalgesia in the affected areas, as well as irregular pain reactions to pressure. In a few instances hypesthesia was noted, usually after a fairly long period of hyperesthesia. In these cases, however, the children complained of the same tingling and lancinating pains as did the children generally.

The presence or absence of hyperesthesia and hyperalgesia was determined by the simple device of stroking with an applicator, a cotton pledget or a piece of paper across the pathway of the spinal nerves or by pinching with the thumb and forefinger along the distribution of the nerve trunks. Ordinarily, by this method, the borders of hyperesthesia were so sharply delineated, and conformed so remarkably to the sensory zones, that no one could seriously doubt their accuracy or their segmental distribution. An exception was noted, however, in those cases in which the involved segments were supplied through the cervical, brachial and lumbosacral plexuses, where there was ordinarily some confusion as to the exact limitation of the pain area, a confusion that seems natural enough in consideration of the complex distribution of the root fibers.

Pressure, as I have remarked, was often productive of pain, especially deep pressure in the paravertebral area. In fact, pressure anywhere along the course of the sensory trunk was likely to elicit pain. However,

on the anterior abdominal wall it did not ordinarily elicit muscle guard and rigidity as in appendicitis.

There were several miscellaneous observations, aside from these characteristic ones, that would seem to be worthy of mention. For instance, there was no evidence in any of the group of a pleural friction or other signs of chest involvement. There was no case in which the abdominal or other reflexes on the affected side were lost or impaired. There was ordinarily no diminution or exaggeration to hot and cold stimuli, two-point perception or vibratory sense. In a few cases however an exaggerated response, and in some few others a diminished response, to these particular stimuli was noted.

There were only six instances in which the skin was visibly affected. A typical herpes zoster developed in two boys of the more than 250 children in the series. Four others manifested a slight flushing and a peculiar velvety texture of the skin within the pain area.

Perhaps the most significant observation was the discovery of a band of hyperesthesia and hyperalgesia in two boys who had been operated on for appendicitis, the one three years, and the other one and one-half years before the current onset of symptoms. This

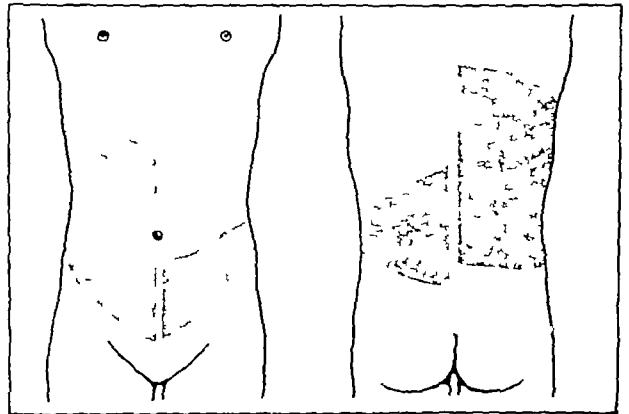


Fig 1 (case 1)—Distribution of cutaneous hyperesthesia—a common type

shows as does no other evidence that an appendix is not necessary to initiate the pain, that another mechanism than the viscerosensory reflex can produce cutaneous hyperesthesia.

In a few selected cases, examinations of the blood and spinal fluid, and cystoscopic and roentgenographic studies yielded normal results.

The treatment of the disorder is simple. It consists of the local application of heat, mustard plasters or other counterirritants and the oral administration of the common sedative and analgesic drugs. With such treatment the symptoms subside in from two to four weeks in the majority of instances, without treatment the duration is likely to be longer, from four to eight weeks. A few cases persisted with remissions and exacerbations for from four to eight months. The prognosis, in any event, is always good, the course is apparently self limited.

One boy remarked about the immediate cessation of symptoms following a lumbar puncture, though he had no increase in spinal fluid pressure, globulin or cell content. Two girls had abrupt and complete relief following the removal of infected tonsils. Another girl had similar relief after the extraction of several carious teeth.

Other types of treatment that have been suggested include (1) injection of the posterior nerve roots with alcohol, which I have not tried, (2) the use of light roentgen irradiation over the point of emergence of the affected nerve trunks, which was employed in a limited number of cases with no apparent relief, and (3) the empirical administration of large doses of brewers' yeast by mouth. This too has been done in a small

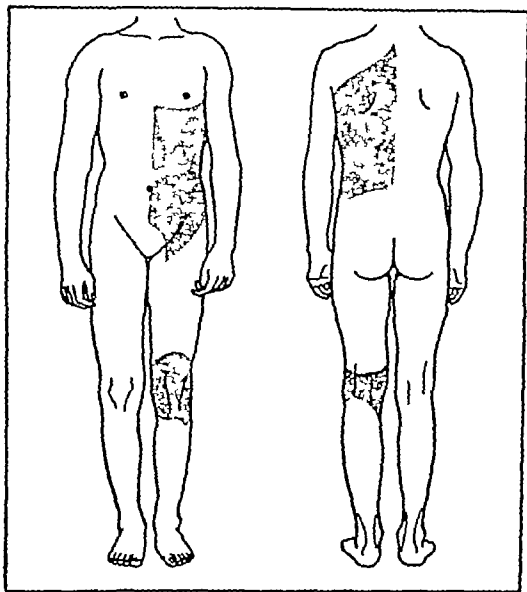


Fig. 2 (case 3)—The relationship of the area of hyperesthesia in the knee is apparent when the proximity of the affected ganglions is considered

group of cases without any apparent improvement in symptoms. In fact, certain of the patients grew worse while taking the yeast.

It would appear then that the disorder is self limited and not influenced by specific or other therapeutic measures, except as I have noted. One thing further stands out as significant. In spite of statements by certain children that they have had pain for from three to five years, I myself have seen fewer than 5 per cent of them in a second attack. Hence it would seem that immunity is likely to follow after one attack of the disease.

REPORT OF CASES

CASE 1—A girl, aged 13 years, had had recurrent attacks of abdominal pain for about a year. The pain was usually on the right side and ordinarily was accompanied by vomiting. The patient complained of frequency of urination but not of dysuria or hematuria. Recurrent throat infections had preceded the attacks of abdominal pain. In the University Dispensary it was thought that she had some renal disease, and so she was referred to the Pediatric Division for study.

The blood was normal. The tuberculin test and the Wassermann reaction were negative. The spinal fluid was clear and contained no globulin and no cells. Cystoscopic examination, intravenous pyelograms and repeated urine cultures yielded nothing abnormal.

After hospitalization for one month, the segmental distribution of the pain was noted and cutaneous hyperesthesia and hyperalgesia were demonstrated in the affected area. The history of frequent sore throats was thought to be significant and removal of the tonsils was advised. Within one week after tonsillectomy the pain disappeared. After more than one year there has been no recurrence of any of the symptoms.

CASE 2—A girl aged 9 years, was first seen in the University Dispensary, April 16, 1934, complaining of a sharp, burning pain in the left side. After two days the pain disappeared but it reappeared shortly thereafter, this time on the right side. The child complained of nausea and vomited once. The his-

tory brought out the fact that these symptoms had been preceded by a moderately severe sore throat and cough, which, however, had cleared up completely before the onset of the pain.

There was quite definite cutaneous hyperesthesia in the distribution of the seventh to twelfth dorsal segments and in the first lumbar segment, accompanied by slight voluntary spasm and moderate tenderness to light palpation over the entire right side.

It was arranged to hospitalize the child for study, April 23. Examinations of the blood and spinal fluid and roentgenograms of the kidneys, ureters and bladder showed nothing abnormal.

One week after admission, a mild throat infection and moderate nasal discharge developed. Simultaneously exquisite tenderness appeared in the right thigh and knee, accompanied by skin hyperesthesia in the distribution of the second, third and fourth lumbar segments. All treatment was unavailing until the carious teeth were extracted. Within five days the pain in the knee was relieved. In a week all cutaneous hyperesthesia had disappeared. Some months later the child reported that she had had no recurrence of pain in the abdomen or knee.

CASE 3—A boy, aged 13 years, was studied in the hospital for five days in March 1933 because of a dull pain over the left side of his body and in his left shoulder following a sore throat, fever and swollen cervical glands. Occasionally he remarked about sharp, lancinating pains induced by coughing, deep breathing, quick movements of the body and walking. Examination revealed a marked skin hyperesthesia and hyperalgesia in the distribution of the first to the twelfth dorsal segments and in the third and fourth lumbar segments.

All ordinary blood studies yielded normal results. The tuberculin test and the Wassermann test were negative. The spinal fluid pressure was slightly increased. The fluid itself was clear, contained two cells and no globulin.

The patient improved so markedly after lumbar puncture that no medication was administered.

CASE 4—A colored boy, aged 12 years, was first seen April 9, 1935, nine days after the outbreak of a typical herpes zoster. He had almost intolerable "burning" pain in the two or three days preceding the eruption. Inspection revealed the typical vesiculation of herpes zoster in the distribution of the third and fourth dorsal segments on the left side of the thorax. Examination brought out a sharply defined band of hyperesthesia and hyperalgesia extending from the third to the eighth dorsal segments. The lower border of this band was well below any of the evident skin lesions, which suggests a lesser degree of involvement of these particular segments.

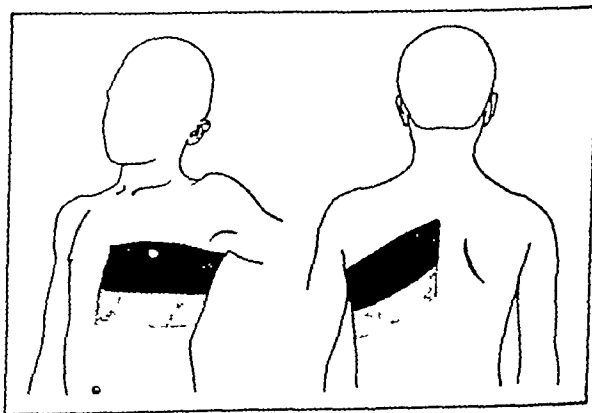


Fig. 3 (case 4)—A band of intense hyperesthesia and vesiculation (shown in black) with a nonvesicular area of hyperesthesia beneath April 9, 1935. Six weeks later, May 23, the band of hyperesthesia was reduced to the limits of the area in black showing a probable relation between severe ganglionic involvement and vesiculation.

Six weeks later, May 23, the hyperesthesia was less marked and the band was narrower, having disappeared from the segments that were less markedly involved. Two weeks later, June 6, all evidence of hyperesthesia and hyperalgesia was gone.

CASE 5—In February 1936, shortly after an attack of sore throat, herpes zoster developed in a boy aged 14 years. Vesiculation was limited to the fourth and fifth dorsal segments on the left side. Hyperesthesia and hyperalgesia involved a much

wider area, the fourth to the eighth dorsal segments inclusive. After more than two months (May 4) he still has an indefinite narrow band of hyperesthesia.

CASE 6—This girl, aged 13 years, when first seen was complaining of pain in the abdomen and groin on the left side. The segmental nature of the pain was noted, but it was not until two weeks later, when similar pain developed in the heel of the same side, that the case became of greater than ordinary

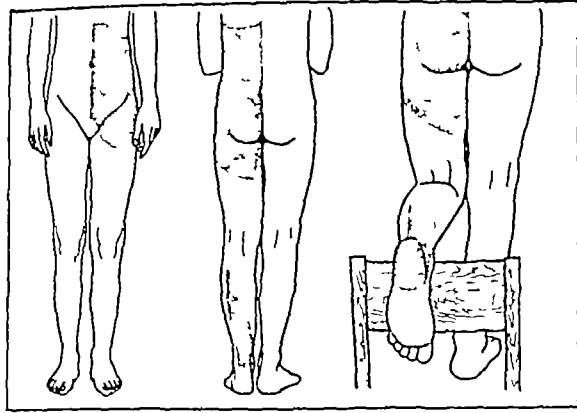


Fig. 4 (case 6)—A most unusual remote area of hyperesthesia in the exact distribution of the first sacral segment

interest. The exact correspondence of this area of hyperesthesia to the distribution of the first sacral segment is remarkable.

CASE 7—A boy, aged 14 years, appeared in the University Dispensary complaining of pain in the right side, which had been interpreted as due to appendicitis. Cutaneous hyperesthesia and hyperalgesia were elicited on both sides, involving the ninth to twelfth dorsal segments.

The boy received large doses of brewers' yeast by mouth (3 teaspoonfuls twice a day for three weeks of the Anheuser-Busch Company's most potent powdered yeast). Not only did the abdominal pain become worse but new pain areas developed in the shoulders and arms. The distribution was bilaterally symmetrical, affecting the ulnar and median innervation while leaving the radial free.

CASE 8—A boy, aged 14 years, had had an appendectomy in 1933. In November 1935 he was seen with bilateral segmental pain in the distribution of the tenth, eleventh and twelfth dorsal segments. It was identified as a most exquisite hyperesthesia and hyperalgesia of the skin, which obviously cannot be explained by recourse to the viscerosensory reflex.

CASE 9—A boy, aged 14 years, had had his appendix removed in September 1934. In February 1936 he was seen because of bilateral cutaneous hyperesthesia and hyperalgesia in the distribution of the tenth, eleventh and twelfth dorsal segments. Again it is rather obvious that the pain cannot be explained by disease in the appendix.

CASE 10—A girl, aged 17, was seen in the University Dispensary with a complaint of intermittent pain in the right side. It had disturbed her more or less for three years. Examination revealed a typical segmental band in the distribution of the tenth, eleventh and twelfth dorsal segments—a band of hyperesthesia in contrast to the usual hyperesthesia. All topical sensations were reduced in this area, although the girl complained of tingling and lancinating pains as did the other children.

EXPLANATION

The explanation of this pain syndrome must be independent of the viscerosensory reflex, since no evidence of visceral disease was established in any of the cases. It must take into account the obvious relation of the pain to infections of the upper respiratory tract as well as its segmental distribution, and it must conform to modern medical thought. Consequently, I have been led to conclude that the essential pathology of the disorder is most likely a postinfectious inflammation of

the posterior spinal nerve roots and their ganglions, a radiculoganglionitis, caused by a neurotropic virus associated with the common cold.

The nature of this virus is undetermined, as to whether it may be a specific virus in its own right or identical with the virus of herpes zoster. It seems to me that the latter is quite possible as well as plausible, since the distribution and the peculiar character of the pain are so very similar in the two disorders. The fact that only two children in the entire series had typical herpetic lesions does not necessarily argue that the rest of the group were affected by a different virus. It suggests rather that vesiculation may be unusual in zoster and that subherpetic manifestations may be the rule.

Any other explanation fails of conviction. I have already remarked about the inadequacy of the theory of the viscerosensory reflex to explain the condition observed in these children. It is unlikely that allergy has any part in the disorder, as recovery has been spontaneous and permanent in most of the cases without recourse to the measures commonly employed in allergic disturbance. On the other hand, a neuritis due to vitamin deficiency may not be so easily dismissed—at least as a contributory factor—in spite of the fact that specific vitamin (B_1) therapy apparently failed to influence the course of the disease. The fact that the great majority of affected children are derived from the underprivileged group would seem to have some significance. It is quite possible that infection may be impotent in the production of this syndrome except in those children already "conditioned" through a deficiency of vitamin, even though my own studies thus far fail to provide such evidence.

REVIEW OF THE LITERATURE

In a study of the literature I have found frequent mention of manifestations commonly ascribed to visceral disease which correspond exactly to the cases I have observed. I have found also numerous references

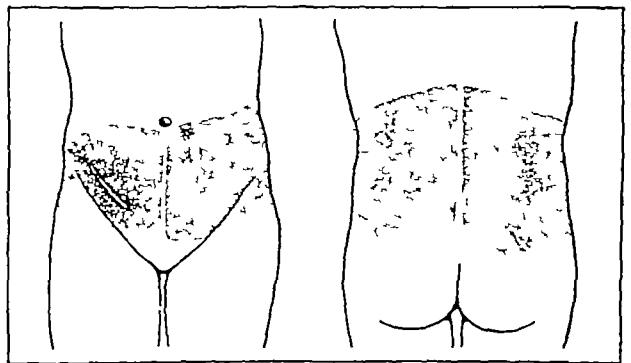


Fig. 5 (case 8)—Girdle of hyperesthesia in a patient who had had an appendectomy three years before

to thoracic and abdominal pain different in character and origin from the syndrome under discussion.

Perhaps the earliest significant observations were those of Ross³ (1888), who postulated a theory of referred somatic pain from an affected viscus to the appropriate spinal segment, thence by a process of diffusion to the sensory fibers of the same segment, whence the pain was referred to the skin. This concept was later elaborated by Mackenzie¹ and by Head²

³ Ross, James. On the Segmental Distribution of Sensory Disorders. *Brain* 10: 333, 1888.

into the theory of the viscerosensory reflex, which has dominated all medical teaching since that time

Sherren,⁴ Cope⁵ and more recently Livingston,⁶ noting exactly the same segmental hyperesthesia and hyperalgesia that I have encountered, have cited clinical cases tending to prove the application of the viscerosensory reflex in this type of pain. Sherren noted the association in forty of 124 cases of appendicitis (26.6 per cent) and Cope in 110 of 185 cases (59 per cent). They both noted that it commonly was absent in cases of gangrenous and ruptured appendixes and in the peritonitis that followed.

Robinson,⁷ on the other hand, another of the early observers, concluded that the "finding of cutaneous hyperalgesia is of slight value in appendicitis" and pointed out that this finding "persists long after other evidences have disappeared."

Livingston (1932) has noted cutaneous hyperesthesia and hyperalgesia in 86 per cent of 400 patients operated on consecutively for appendicitis. He emphasizes particularly a maximal intensity of such pain within the limits of a triangle, which he calls Sherren's triangle. He attaches such importance to this particular finding that he calls it the most pathognomonic sign in acute appendicitis. While he noted the same type of pain covering other and distinctly larger areas than this triangle he apparently did not attach any significance to the wider distribution. Curiously, he too noted that in the presence of gangrenous and ruptured appendixes the skin signs were singularly absent.

He did make observations, however, in a patient with an appendicostomy which would seem to support the validity of the viscerosensory reflex in certain of these cases. He also quotes Campbell, who has noticed skin hyperesthesia along the inner aspect of the upper part of the thigh following ureteral manipulation in the course of cystoscopy.

These observations, of course, make it difficult to discard entirely the theory of the viscerosensory reflex. I am really not interested in doing so but rather in emphasizing another mechanism which, I believe, is operative in a great many of these cases.

Morley⁸ is convinced that the viscerosensory reflex is a doubtful mechanism and that cutaneous hyperesthesia is of little diagnostic importance in appendicitis. He believes that it is derived from stimulation of a sensitive parietal peritoneum.

Boland⁹ doubts the essential relation of skin hyperesthesia to appendicitis but does remark that he has observed herpes zoster occasionally in patients who had symptoms simulating appendicitis. Comroe¹⁰ also mentions, without discussion, herpes zoster as a cause of abdominal pain.

Carnett,¹¹ of all clinical observers in this country, has approached most nearly my interpretation of this type of pain. However, he does not in any way relate it to acute respiratory infections or to a virus etiology. He does not specifically implicate the ganglions but does discuss posterior root pains originating in certain lesions of the spinal cord or vertebrae, such as Pott's disease, carcinoma with metastases and fracture or subluxation of the spine. He also called attention to pressure on the posterior nerve roots from postural trauma. He has endeavored especially to differentiate this type of pain, which he calls "parietal," from the pain of acute and chronic appendicitis, and in so doing questions the application of the viscerosensory reflex in most instances of skin hyperesthesia.

Russetzki¹² in 1934 described a group of 100 cases in which the symptoms and signs are approximately the same that I have observed. He noted that the symptoms of segmental pain appeared generally within a period of from five to ten days after the onset of an infection of the upper respiratory tract, that it ordinarily lasted from twenty to thirty days, that the characteristic disturbances were lancinating pains in the sensory distribution of the spinal segments, paroxysms of coughing and sneezing, difficulty in moving the affected parts, pain on percussion over the corresponding vertebral areas, and a slight increase in the cell count and globulin of the spinal fluid. In his series the pain was localized in the dorsal segments in 60 per cent of the cases, in the cervical segments in 24 per cent of the series and in the lumbar segments in 16 per cent. In 85 per cent of all his cases the involvement was unilateral, in the remaining 15 per cent bilateral. These observations all are reasonably in keeping with those in my own series. His explanation, as well, is essentially the same as the one I had arrived at independently, namely, that segmental pain, associated with hyperesthesia and hyperalgesia of the skin, is due to the action of a neurotropic virus following grippal and influenzal infection.

Additional references to the literature seem unnecessary, since much of it applies only indirectly to this study. However, I should like to mention mesenteric and retroperitoneal lymphadenitis, the "Brennemann syndrome,"¹³ because it brings out the relation between infections of the upper respiratory tract and abdominal pain of another sort. Likewise the studies of Evans¹⁴ and the more recent observations of Freedman¹⁵ have shown that there is a definite relation between infections of the upper respiratory tract and the incidence of acute appendicitis.

COMMENT

It is evident, then, that several symptom complexes may arise in connection with acute infections of the upper respiratory tract and must be considered individually in the differential diagnosis of pain. Yet it is not too much to believe that they may occasionally occur together. Thus the apparent connection between appendicitis and skin hyperesthesia in many instances and the total lack of it in many others may be explained most readily by assuming that they have only an inci-

4 Sherren James. On the Occurrence and Significance of Cutaneous Hyperalgesia in Appendicitis. *Lancet* 2: 816-821. 1903.

5 Cope, Zachary. Some Neglected Aids in the Diagnosis of Acute Abdominal Conditions. *Clin J* 63: 483-488 (Dec.) 1934.

6 Livingston E. M. The Skin Signs or Viscerosensory Phenomena in Acute Appendicitis. *Arch Surg* 1: 83-95 (July) 1923. Further Studies of Viscerosensory Phenomena. Acute Cholelithiasis. Acute Nephrolithiasis. *J. A. M. A.* 82: 1495-1498 (May 10) 1924. The Skin Triangle of Appendicitis. Its Significance and Diagnostic Value as Observed in 400 Cases of Acute Appendicitis. *Arch. Surg.* 13: 630-643 (Nov.) 1926. A Clinical Study of the Abdominal Cavity and Peritoneum. New York: Paul B. Hoeber. 1932.

7 Robinson Henry. The Clinical Bearing of Cutaneous Tenderness in Various Acute Abdominal Disorders Especially Appendicitis. *Quart J Med* 1: 387-416. 1908.

8 Morley John. *Abdominal Pain*. New York, William Wood & Co. 1931.

9 Boland F. K. Interpretation of Abdominal Pain. *South M J* 28: 133-137 (Feb.) 1935.

10 Comroe B. I. Nonsurgical Causes of Acute Pain. *Ann Surg* 101: 438-444 (Jan.) 1935.

11 Carnett, J. B. Pain and Tenderness of the Abdominal Wall. *J. A. M. A.* 102: 345-348 (Feb. 3) 1934.

12 Russetzki J. Les polyradiculites post-grippales. *Ann de m d* 36: 142-146 (July) 1934.

13 Brennemann Joseph. Abdominal Pain of Throat Infections in Children and Appendicitis. *J. A. M. A.* 80: 2183-2186 (Dec. 24) 1927.

14 Evans J. S. Epidemiology of Acute Appendicitis in Relation to Acute Nasal and Tonsillar Infections. *Wisconsin M J* 17: 91 (Aug.) 1916.

15 Freedman H. J. Forty Two Cases of Appendicitis in Children Occurring During an Epidemic of Upper Respiratory Tract Infection. *Arch Pediat* 46: 604-616 (Oct.) 1929.

dental relation to each other—in other words no relation at all except that they happen to occur simultaneously in the same patient

If, then, cutaneous hyperesthesia is divorced from appendicitis and other visceral disease, as the evidence from this study indicates must be done it must be concluded that the viscerosensory reflex does not explain this type of pain. On the other hand, the explanation I have proposed seems to apply to all the cases in the series, including those in which segmental hyperesthesia appeared following appendectomy

The site affected by the attacking virus has not been definitely established. There have been no biopsy or postmortem studies or other localizing evidence. Russetzki¹⁶ apparently looks on the disorder as a primary radiculitis, a variation of the radicular syndrome first described by Dejerine¹⁶ and his pupils and reviewed by Mayer¹⁷ in this country, whereas I am disposed to look on it as a primary ganglionitis with secondary radicular involvement, i. e., as a form of herpes zoster

I feel justified in this conclusion because of the striking resemblance of this disorder to herpes zoster. It explains every feature of the pain, its peculiar character as well as its segmental distribution. The fact that vesiculation occurred only twice in the series would seem to indicate a basic difference between this disorder and herpes zoster. Yet it has occurred to me that we may be dealing with a mild or subherpetic form of zoster, which seems a simpler explanation than to assume that a totally different virus does essentially the same thing as the zoster virus

In its thoracic and upper abdominal distribution it is likely that most observers who are not too completely persuaded by the viscerosensory reflex will recognize in this syndrome the well known intercostal neuralgia. This is probably a sufficiently accurate designation so far as it applies, but it is really only a part of the whole. Other localized neuralgias are frequently encountered. It would seem advisable to include all forms under one general head, especially those forms having a common origin. Russetzki has called the syndrome "post-grippal polyradiculitis." I think his terminology minimizes the probable involvement of the posterior root ganglions. I should suggest, therefore, the term "radiculoganglionitis" as being both more nearly accurate and more descriptive of the true disease state. If it is desired to use a simpler clinical term I should suggest that "segmental neuralgia" seems more nearly to fulfil all the requirements than any other

SUMMARY

1 I have seen more than 250 cases of segmental pain in children during the last five years. This pain was, with rare exceptions, manifest in the form of cutaneous hyperesthesia and hyperalgesia

2 It was characteristically associated with or preceded by some form of infection of the upper respiratory tract.

3 The symptoms were relieved by counterirritants and the common analgesic drugs

4 The duration of the pain was variable and unpredictable but the disorder has seemed to be self limited, with an apparent tendency to confer immunity

5 The evidence indicates that the syndrome is not related in any way to visceral disease and that the vis-

cerosensory reflex is not a satisfactory explanation of the manifestations

6 It is suggested that the disorder may be caused by a neurotropic virus with a special predilection for the posterior roots of the spinal nerves and their ganglions. The additional suggestion is offered that the disorder may well be a subherpetic form of herpes zoster

7 The designation radiculoganglionitis is proposed for the syndrome, along with the simpler clinical term segmental neuralgia

10515 Carnegie Avenue

ABSTRACT OF DISCUSSION

DR. JOHN A. TOOMEY, Lakewood, Ohio: Dr. Davis has focused attention on a condition which many pediatricians may have seen often and not recognized. It is my very good fortune to have examined several of his cases, and I can subscribe to the facts described by him in these instances. He speaks truly when he states that this syndrome is common. To my knowledge, his series is the largest on record. I agree that the condition is probably postinfectious in origin, sometimes following so called influenza. Whether the causative factor is a virus entity is not known, but Dr. Davis's suggestion along that line is interesting. It may be the same as the herpes zoster virus, or it might be similar to or identical with that virus first isolated from a common cold and described by Dochez and his associates. It certainly must be neurotropic in nature. I do not think that the term "radiculoganglionitis" is complete. It should be "neuroradiculoganglionitis," but the term proposed by Davis, "segmental neuralgia," is comprehensive. I do not find myself completely in accord with the author with regard to the viscerosensory reflex response. It may be, however, that Dr. Davis did not intend to include the mechanism of production in his presentation. It is true, as he states, that a disease starting in the nerve roots and ganglions would give peripheral symptoms similar to a disease that started in the viscera and would give visceral stimulation with a referred viscerosensory response. Visceral disease is ruled out because no pathologic changes are visible. The absence of recognizable pathologic changes is granted, but, on the other hand, absorption of toxins may occur anywhere along the gastro-intestinal tract without leaving visible traces of its presence. Such neurotropic toxins would be thus taken up and carried from the gastro intestinal tract directly to the somatic nerves. It is my belief that such is the mechanism that produces the subjective and objective symptoms, not only in typhoid but in poliomyelitis and influenza as well, and perhaps even in Dr. Davis's segmental neuralgia. Were this so, one could see how the viscerosensory reflexes might be disturbed by such conditions and yet not give rise to noticeable pathologic evidence. Dr. Davis has collected a vast amount of clinical information that is extremely practicable from the standpoint of differential diagnosis and he deserves our thanks for this careful compilation.

DR. HUGH L. DWYER, Kansas City, Mo.: I am sure that all of us have seen just such cases as Dr. Davis has described this afternoon. Not infrequently, one sees in the outpatient departments children who complain of pain in the side of the chest, or in the abdomen, which has been relieved by the local application of heat, by counterirritation or by sedatives. Careful examination of these children may show none of the physical signs of disease in the abdomen or in the chest. The examiner usually suspects that more definite signs will appear in a day or two, but the symptoms disappear without the development of pleurisy, pneumonia, appendicitis or other visceral involvement. With such an experience, I have often thought that the child had magnified his symptoms or, because he had been to the outpatient department many times before, that he liked to visit the clinic. Nevertheless, the sharp, lancinating pains that were present in some cases must have resulted from definite tissue changes. The fact that these symptoms are associated with cutaneous hyperesthesia and hyperalgesia, and that the borders of the involved area can be rather sharply defined by stroking or pinching the skin, suggests involvement of the spinal segments. Dr. Davis's observation of the frequency of this

16. Dejerine, J. *Seméiologie des affections du système nerveux* Paris, 1: 257, 1914.
17. Mayer, E. E. *Radiculitis Its Diagnosis and Interpretation* J. A. M. A. 71: 353-358 (Aug. 3) 1918.

condition following closely on mild infections of the upper respiratory tract suggests a relationship. It is logical to assume such a relationship because of the similarity of segmental neuralgia to herpes zoster, which presumably is a virus disease, and because Dochez and others have offered evidence that the common cold is due to a filtrable virus. It would seem that if physicians would adopt such means as stroking or pinching the skin in the region of the sharp, sticking pains in those children in whom there are no definite signs of visceral disease, and especially in the absence of fever and toxemia, an explanation would be found for those cases in which one waits for visceral disease that never appears.

DR. JOHN HART DAVIS, Cleveland. Dr. Toomey thinks I have disposed of the viscerosensory reflex somewhat too rapidly. I am sure he does not hold with those who think this type of pain originates in the appendix, but he has suggested that the viscerosensory reflex may operate after all through the gastrointestinal tract. I am not sure that he refers to a true reflex, an impulse transmitted along the reflex path, so much as he refers to a possible absorption of virus from the tract extending along the gray rami communicantes to the ganglions and the posterior roots. I am pleased with the suggestion, because it offers a pathway for virus spread that I had overlooked, but, after all, it is not reflex. I find the probable pathway of the virus less of a worry than suitable proof of its actual existence. I have not seen the virus. No one has ever seen a virus. It may be we are dealing with a soluble toxin instead but something at least that seems to activate the posterior root ganglions in a specific pain reaction. My chief interest with respect to this presentation is that it may enable other practitioners of medicine to differentiate more readily than hitherto between real visceral disease and harmless conditions that simulate visceral disease.

CLINICAL EXPERIENCE WITH AN IMPROVED CRYSTALLINE INSULIN

SAMUEL S. ALTSHULER, MD
AND
RUDOLPH LEISER, MD
ELOISE, MICH.

Efforts have been made during the past few years to develop an insulin that might in a measure approximate the continuous even internal secretion of the pancreas. Recently Hagedorn¹ has introduced insulin protamine and Root and his associates² as well as Sprague and his associates³ have described clinical experiences with this product. Earlier investigators⁴ have attempted to devise methods to obtain a prolonged or sustained effect from insulin.

Because of the rapid action of the insulin in common use, it has been necessary to administer the amount required in two, three or even four doses daily. Especially in severe cases of diabetes has it been difficult to control the blood sugar level between the extremes of hyperglycemia and hypoglycemia. At best, the life of the diabetic patient who needs insulin is an abnormal one and any improvement that would decrease the number of daily injections, the total number of units required or the entire complexity of insulin therapy would be of inestimable benefit to the patient.

From the William J. Seymour Hospital.
1 Hagedorn H. C., Jensen B. N., Krarup N. B. and Wedstrup I. Protamine Insulinate. J. A. M. A. 106:177 (Jan. 18) 1936.
2 Root H. F., White Priscilla, Marble Alexander and Stotz, E. H. Clinical Experience with Protamine Insulinate. J. A. M. A. 106:180 (Jan. 18) 1936.
3 Sprague R. G., Blum B. B., Osterberg A. E., Kepler E. J. and Wilder R. M. Clinical Observations with Insulin Protamine Compound. J. A. M. A. 106:1701 (May 16) 1936.
4 Leyton O. F. The Administration of Insulin in Suspension. Lancet 1:756 (April 13) 1929.

This paper deals with a clinical investigation of an improved crystalline insulin that was developed by Dr. Melville Sahyun of Detroit. Although in the course of preparation this insulin is in a crystalline form, for

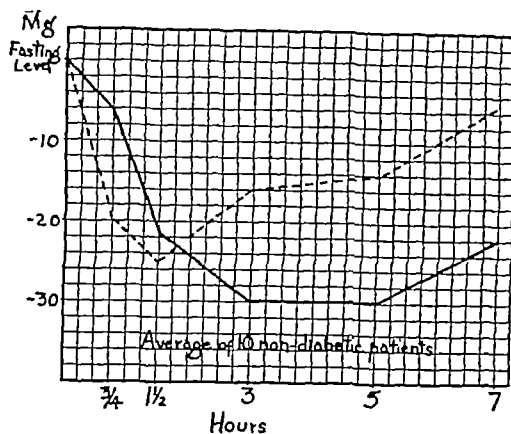


Chart 1—Effect on blood sugar of old insulin and crystalline insulin (10 units) average of ten nondiabetic patients. Broken line old insulin; solid line, crystalline insulin.

clinical use it is dissolved in various concentrations and assayed in the usual manner. The technic of administration is the same as that used for standard commercial insulin. For purposes of brevity, throughout this paper the standard commercial insulin will be referred to as "old insulin" and the improved crystalline insulin as "crystalline insulin."

STUDIES OF NONDIABETIC PATIENTS

The comparative action of old insulin and of crystalline insulin on ten nondiabetic patients was first investigated.

After an overnight fast, blood sugar determinations were made, after which 10 units of old insulin was administered to each patient. Samples for blood sugar determination were withdrawn at intervals of three-quarters, one and one-half, three, five and seven hours. No food was taken during the test period. Twenty-four hours later the same procedure was repeated on the same group with an identical amount of crystalline insulin. The curves of the averages of these nondiabetic patients are shown in chart 1, from which it

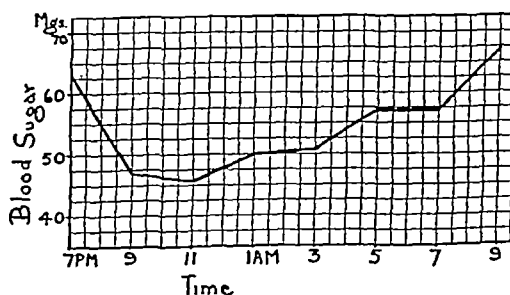


Chart 2—Fourteen hour study of effect of 10 units of crystalline insulin on blood sugar of a nondiabetic patient.

may be seen that the crystalline insulin lowers the blood sugar more gradually and maintains the low level for a longer period, and that at the end of seven hours the blood sugar is still far below the fasting level.

DURATION OF ACTION

The observation that seven hours after the administration of crystalline insulin the blood sugar still had

not returned to the fasting level led to an investigation of the duration of the effect of this insulin. Consequently, three hours after the evening meal, 10 units of crystalline insulin was given to each of two nondiabetic patients. Blood sugar determinations were made immediately before the administration of the insulin and every two hours thereafter for fourteen hours. No food was taken during the period. The results of this experiment are shown in charts 2 and 3.

In one case (chart 2) the blood sugar returned to the starting level in thirteen hours, the curve of the other patient (chart 3) shows that the starting level had not been regained at the end of fourteen hours.

STUDIES OF DIABETIC PATIENTS

Crystalline insulin has been used in the treatment of twenty-nine diabetic patients whose ages range from 17 to 86 years. These patients have been in the hospital receiving accurately weighed diets for periods varying from two months to five years. All the patients are indigents who have no homes and are kept in the metabolic wards, where they are available for observation over long periods of time.

Comparative studies of old insulin and crystalline insulin have been made in twenty cases. The most equitable comparisons are those made in the cases of

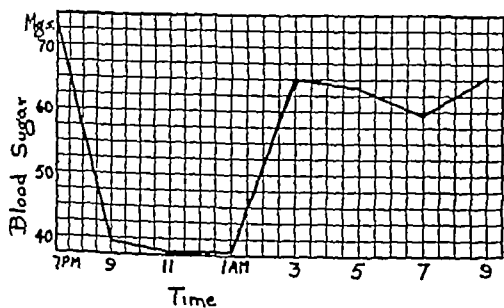


Chart 3—Fourteen hour study of effect of 10 units of crystalline insulin on blood sugar of a nondiabetic patient.

patients with severe diabetes, who are more likely to be sensitive to slight changes in insulin dosage or times of administration.

For this study, the minimum maintenance dose of old insulin required to control the patient was compared with the minimum maintenance dose of crystalline insulin. The criteria of diabetic control were blood sugars between 70 and 180 mg. Below 70 mg was considered the level of insulin reaction, and above 180 the level of glycosuria.

Six blood samples (capillary) were taken during twenty-four hours, at 5 a. m., 10 a. m., 3 p. m., 7 p. m., 12 midnight and 5 a. m. Determinations were made by Folin's method. There were approximately 2,700 blood sugar determinations. Daily qualitative urinary examinations were made by Benedict's method on twenty-four hour specimens.

The diets were kept constant throughout this investigation. Both high and low carbohydrate diets were in use. The carbohydrate content ranged in various cases from 100 to 200 Gm., protein from 60 to 70 Gm., and fat from 80 to 150 Gm. Because of the routine of the institution, breakfast was given at 6 a. m., lunch at 10 30 a. m. and supper at 3 30 p. m. The three meals were equal in available dextrose content.

To allow the patient to become stabilized on certain doses before blood sugar studies were made, changes in insulin dosage were not effected oftener than from five to seven days.

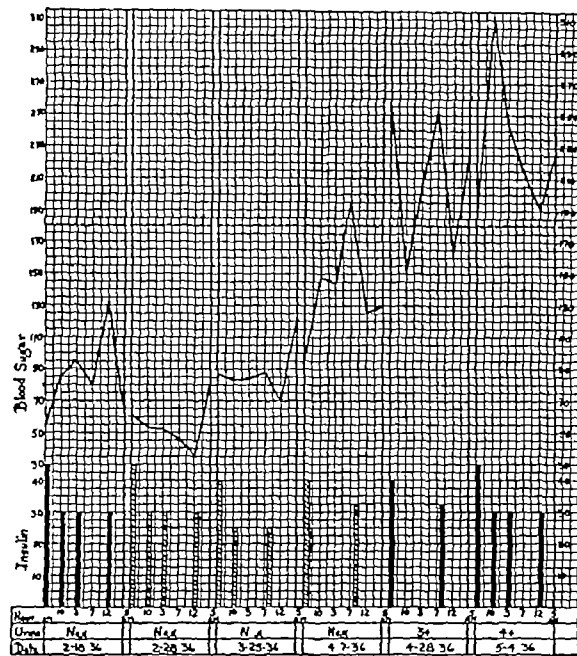


Chart 4—Dosage of insulin and blood sugar level in case 1. Diet carbohydrate, 100 Gm. protein 70 Gm. fat 100 Gm. In the charts old insulin is represented by solid columns and crystalline insulin by shaded columns.

Five cases selected from among our patients with more severe diabetes.

CASE 1 (chart 4)—A girl, aged 17, known to have had diabetes since 1924, was admitted to the hospital in diabetic coma June 7, 1934. She had a juvenile type of diabetes and

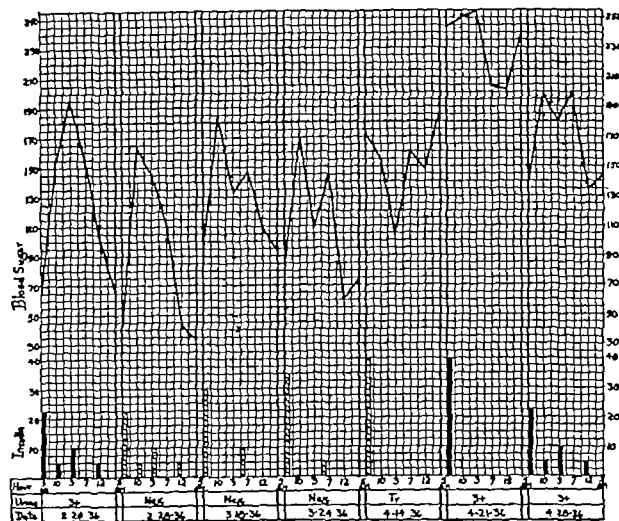


Chart 5—Dosage of insulin and blood sugar level in case 2. Diet carbohydrate 170 Gm. protein 70 Gm., fat 80 Gm.

had always been difficult to control. When this investigation was started on February 18 her minimum maintenance amount of insulin was 135 units divided into four doses daily. She was given crystalline insulin on February 19 and the dosage and times of administration were adjusted until the minimum maintenance dose was reached on April 7, when she received 70 units of crystalline insulin in two doses. As a control study, for two

weeks she was put on 70 units of old insulin, given in two doses daily, with a resultant glycosuria and hyperglycemia. A further control period of one week on the original 135 units in four doses still showed glycosuria and hyperglycemia.

CASE 2 (chart 5)—A man, aged 59, known to have had diabetes since 1926, was admitted to the hospital in September 1932. This patient was also difficult to control because of fluctuations between insulin reaction and hyperglycemia. At

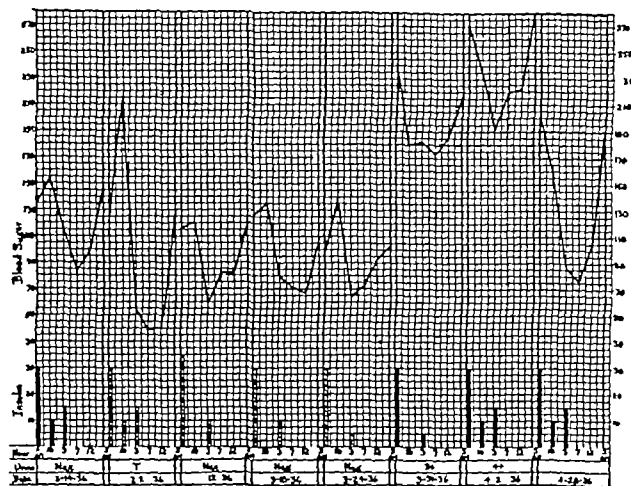


Chart 6—Dosage of insulin and blood sugar in case 3. Diet: carbohydrate, 170 Gm. protein, 70 Gm. fat, 70 Gm.

the beginning of the study, February 20, his minimum maintenance dose was 42 units divided into four doses daily. He received crystalline insulin on February 21 and the dosage was gradually adjusted until April 14, when his minimum maintenance dose of 40 units of crystalline insulin given in one dose was reached. A control period of one week followed, when the patient was given 40 units of old insulin in one dose, on which he developed glycosuria and hyperglycemia. During a further control period of one week the original dosage of 42 units in four doses daily failed to free him from the glycosuria and hyperglycemia.

CASE 3 (chart 6)—A man, aged 61, known to have had diabetes since 1921, was admitted to the hospital in July 1932



Chart 7—Dosage of insulin and blood sugar level in case 4. Diet: carbohydrate, 100 Gm. protein 60 Gm. fat 150 Gm.

When the study was begun February 14, he was receiving 55 units of insulin in three doses daily. February 15 he was put on crystalline insulin and the dosage was gradually adjusted until March 24, when he was being given 35 units in two doses daily. A week's control period with 35 units of old insulin in two doses daily showed a glycosuria and hyperglycemia. A second control week on the original 55 units in three doses daily did not abate this condition. However after two consecutive

weeks on the original dosage the glycosuria began to disappear and the blood sugar approached the normal level.

CASE 4 (chart 7)—A woman, aged 50, known to have had diabetes since 1934, was admitted to the hospital in March 1935. At the beginning of this investigation, February 18, she was receiving 70 units of insulin in three doses daily. She was placed on crystalline insulin February 19 and the dosage was adjusted until on April 7 she was able to get along on 30 units of crystalline insulin in one dose. During a control period of one week the patient was given 30 units of old insulin in one dose daily, on which she developed glycosuria and hyperglycemia, which a further control week on the original 70 units in three doses daily did not abate.

CASE 5 (chart 8)—A woman, aged 65, known to have had diabetes since 1932, was admitted to the hospital in July 1934. February 10 she was receiving 20 units of old insulin in two doses daily. The patient was placed on crystalline insulin on February 11 and the dosage gradually adjusted until April 7, when she received 10 units in one dose. During a control week on 10 units of old insulin in one dose she developed a marked hyperglycemia. Another control week on 20 units of regular insulin in two doses daily did not appreciably improve her condition.

COMMENT

Comparative studies show that crystalline insulin controls the diabetes with fewer units of insulin given

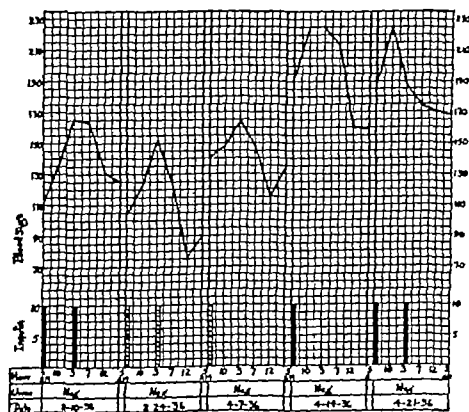


Chart 8—Dosage of insulin and blood sugar level in case 5. Diet: carbohydrate, 100 Gm. protein 60 Gm. fat 150 Gm.

in fewer doses. The first control periods, in which comparison is made between the minimum maintenance dose of crystalline insulin and an equal amount of old insulin, indicate that the same effect cannot be accomplished with the use of the latter.

The second control periods, in which the patient was returned to the original dosage of old insulin, did not bring about control of the diabetes as these dosages had at the start of this investigation, because they were minimum maintenance doses and not sufficient to lower the blood sugar within normal levels.

In this entire group of diabetic patients to whom crystalline insulin was given, no untoward effects either local or general were observed. It was found to be satisfactory in controlling the glycosuria in diabetic patients with such infections as abscesses of the neck, gangrene of the feet and infections of the upper respiratory tract. It was efficacious in the treatment of diabetic patients with mild acidosis.

CONCLUSIONS

1 Crystalline insulin has a slower action than old insulin and therefore produces a more gradual and more prolonged effect on the blood sugar.

2 The duration of action on nondiabetic patients is approximately thirteen to fourteen hours

3 In the treatment of diabetes mellitus, blood sugar levels are better controlled with fewer doses or with fewer total units. In many cases both the number of injections and the amount of insulin is less when crystalline insulin is used

David Whitney Building, Detroit

PRIMARY TULAREMIC ULCERS IN PHARYNX

F H McGOVERN, M D
UNIVERSITY, VA

Tularemia is a disease arousing increasing comment. In Virginia alone 105 cases were reported to the state board of health in 1932. Ophthalmologic literature frequently records the oculoglandular form of tularemia. My object in this paper is to review briefly the disease and to report a case in which the primary lesion was located in the pharynx. This case, of especial interest to the otolaryngologist, presents a primary site of infection in a region heretofore unreported in the literature.

Historically, tularemia is the first disease to be worked out entirely by American investigators, and it stands as a monument to the scientists of the United States Public Health Service. In 1911-1912 McCoy and Chapin¹ first discovered and cultivated *Bacterium tularense* in ground squirrels of Tulare County, Calif. Wherry and Lamb² first isolated the organism from a human being (conjunctiva) in 1914. They found the organisms in infected rabbits in their locality and warned of the danger of transmission of the infection from rabbits to man.³ Francis⁴ in 1919 recognized "deer fly fever" of Utah to be caused by *B. tularense* and named the new disease tularemia. Francis further contributed largely to the knowledge of the symptoms, pathology, bacteriology, transmission and diagnosis of the disease.

Tularemia is primarily a fatal disease of rodents, chiefly rabbits, and is secondarily transmitted to man from rodents by the bite of an infected tick and other blood sucking insects, by contamination of the hands with infected material, or by the ingestion of improperly cooked infected meat.

Clinically, of the four main types of tularemia—ulceroglandular, oculoglandular, glandular, and typhoidal—I am dealing here with a form of ulceroglandular tularemia. The ulcers are chronic indurations resembling the primary lesion of syphilis, appearing after an incubation period of from one to nine days, and accompanied by chills, high fever, sweating, headache and prostration. The regional adenopathy, often quite large and frequently suppurative, may appear before the primary lesion is apparent. Pulmonary manifestations⁵ consisting of pulmonic consolidation, bronchitis or

pleural effusion may follow the initial symptoms. A moderate leukocytosis with a distinct shift of the Schilling count to the left is found.

A diagnosis is ordinarily confirmed by a positive agglutination reaction of the serum against *Bacterium tularense*. This reaction becomes positive generally in the second or third week and persists indefinitely. Cross agglutinations with the organisms for undulant fever occur in about 20 per cent of cases and at times lead to confusion. Recently Lee Foshay⁶ has reported satisfactory diagnostic results with an intradermal injection of a suspension of *Bacterium tularense*. This test is said to have the advantage over the agglutination test of becoming positive much earlier in the disease.

General symptomatic treatment is usually instituted, with incision of the lymph node when necessary. The Camps⁷ have reported two cases in which intravenous mercurochrome proved to be of marked benefit. Intravenous neoarsphenamine⁸ and roentgen therapy to the primary lesion⁹ have been recommended. Foshay¹⁰ has urged the administration of his special antitularemia serum. He reports excellent results following this form of therapy: the febrile period is shortened, the symptoms are ameliorated, the prolonged disability is lessened, and the glandular enlargement is decreased. The serum is especially effective when used early in the course of the disease, and an early diagnosis can be made by the use of his intradermal test.

In the current literature are reports of several cases of tularemia presenting pharyngeal lesions. Crawford¹¹ writes of a family that contracted tularemia from the ingestion of insufficiently cooked rabbit. In one member of the family a peritonsillar abscess and enlarged submaxillary lymph nodes developed. The patient died in the fourth week of lung abscess and bronchopneumonia. His blood agglutinated *B. tularense* during the second week in a dilution of 1:80 and during the third week in a dilution of 1:1,280.

Freese, Lake and Francis¹² report three fatal cases of tularemia in which conjunctivitis occurred. The surviving patient had a swollen left eye, marked enlargement of the lymph nodes of the left superior cervical region and a slightly reddened throat. Swabs taken from the nose and throat were used to inoculate culture mediums and guinea-pigs. The guinea-pigs died and showed typical postmortem changes of tularemia in the spleen and liver. The patient's blood serum agglutinated *B. tularense* in a dilution of 1:1,280. A purulent dacryocystitis developed. Four members of the family remained well. They showed that insufficiently cooked infected meat can cause fatal lesions in experimental animals when injected subcutaneously.

Francis¹³ has also seen a case of tularemia with the primary site of infection at a pimple in the nose, which the patient had scratched while dressing a rabbit.

REPORT OF CASE

A white woman, aged 32, married, admitted to the University of Virginia Hospital, July 18, 1934, complained of an extremely sore throat of twelve days' duration. The onset of illness had

6 Foshay Lee. *Tularemia* J Infect. Dis 51: 286-291 (Sept Oct) 1932. An Antiserum for the Treatment of Tularemia J A M A 101: 1447-1449 (Nov 4) 1933

7 Camp Jim and Camp J H. *Southwestern Med.* 16: 294 (July) 1932

8 Fischer W S. *J Indiana M A* 26: 273 (June) 1922

9 Baer H L. *Roentgen Treatment of the Primary Lesion of Tularemia, Arch Dermat & Syph* 28: 557-559 (Oct.) 1933

10 Foshay Lee. *Am J M Sc* 187: 235 (Feb.) 1930

11 Crawford Monroe. *Tularemia from the Ingestion of Insufficiently Cooked Rabbit* J A M A 99: 1497 (Oct 29) 1932

12 Freese H L, Lake G C and Francis Edward. *Pub Health Rep* 41: 369-372 (Feb 26) 1926

13 Personal communication to the author

From the Department of Otolaryngology and Ophthalmology University of Virginia Hospital
Read before Virginia Society of Otolaryngology and Ophthalmology at Fredericksburg Va. May 3 1935

1 McCoy G W and Chapin C W. *J Infect. Dis* 10: 61-72 1912

2 Wherry W B. and Lamb B H. *J Infect. Dis* 15: 331-340 1914

3 Wherry W B and Lamb B H. *Discovery of Bacterium Tularense in Wild Rabbits and the Danger of Its Transfer to Man* J A M A 63: 2041 (Dec. 5) 1914

4 Francis Edward. *Pub Health Rep* 34: 2061-2062 (Sept 12) 1919

5 Blackford S D. *Ann Int. Med* 5: 1421 (May) 1932

been sudden, commencing with chills, fever and sore throat. Her local physician was consulted and made a throat smear and blood culture, both of which were reported negative. Although a definite diagnosis could not be made, the case was treated as Vincent's angina by the administration of neoarsphenamine intravenously and locally to the throat. The temperature at onset had been 104 F and had remained at this height until two days before admission, at which time it dropped to 102 F. The patient's condition did not improve in spite of treatment, and the excessive dysphagia made eating almost impossible. The patient lost 10 pounds (4.5 Kg) in twelve days and felt extremely weak at the time of admission.

The positive changes on physical examination were as follows: There was a large confluent ulceration involving almost the entire right side of the posterior wall of the pharynx, many discrete shallow ulcerations measuring from 2 to 3 cm in diameter, covered with a gray exudate, were scattered over the posterior pharyngeal wall. The cervical glands were bilaterally enlarged and tender. The temperature on admission was 102.4 F. The tonsils had been removed. The eyes, nose, sinuses and ears were normal on clinical examination. No other adenopathy was noted.

The urine was normal. The white blood count was 21,000, with a distinct shift of the Schilling count to the left. A throat culture was negative for diphtheria and showed nonhemolytic streptococci, staphylococci and *Micrococcus catarrhalis*. The blood culture was negative.

Antimony and potassium tartrate intravenously and a gargle of solution of hydrogen peroxide were used immediately on the basis of a preliminary diagnosis of Vincent's angina. On the second day in the hospital a 1 per cent mercurochrome spray was tried, which gave the patient remarkable immediate relief, the pharyngeal pain and dysphagia disappearing almost entirely. Because of the high fever, the atypical course for the common pharyngeal diseases and the marked cervical adenopathy, routine agglutinations for the typhoids, tularemia, typhus and undulant fever were done. The first report showed a 4 plus agglutination against *Brucella abortus* in dilutions of 1:320 and 2 plus in dilutions of 1:1,280. A one plus agglutination against *B. tularensis* was found in dilutions of 1:640. Six days later, i. e., about three weeks after the onset of the illness, a 4 plus agglutination against *B. tularensis* was found in dilutions of 1:1,280, whereas an agglutination against *Brucella abortus* had fallen to 3 plus in 1:20, a week later the *Brucella abortus* agglutination was negative. A specimen of blood was sent to the United States Public Health Service and a complete agglutination for tularemia was found in dilutions of 1:2,560 and partial agglutination in dilutions of 1:5120. The report on the undulant fever agglutination was negative. An intradermal test with Foshay's suspension of *B. tularensis* was negative, but this might have been occasioned by the fact that the suspension used was nearly a year old. Roentgenograms of the chest revealed a slight increase in density in both hilus zones and descending trunks on each side.

Two days after admission the patient became afebrile, and she was discharged greatly improved after eight days in the hospital. Two months after her discharge she reported by letter that she was enjoying excellent health and that the glands and sore throat had entirely disappeared. She had noticed a considerable falling out of her hair following the illness.

COMMENT

The clinical course was typical of tularemia, there was no evidence of a primary lesion on any part of the body other than the posterior wall of the pharynx and no other than cervical adenopathy was present. A positive agglutination for *B. tularensis* was obtained in the third week of the disease in dilutions up to 1:1,280 in three separate laboratories.

On direct questioning a history was obtained of picking ticks from the ears of her pet dog and crushing them between her fingers one week before the sudden onset of sore throat and high fever. The infection was evidently carried to the mouth on fingers that had

crushed infected dog ticks. Francis¹³ also believes that this is the probable mode of infection. If the organisms can be carried on the fingers to infect other parts of the body, it can probably also be carried to the pharynx. The eating of improperly cooked infected food is another way in which a primary lesion may occur.

The relief of pharyngeal discomfort achieved by the 1 per cent mercurochrome spray is of interest in view of the report by the Camps on the intravenous use of mercurochrome. The result with arsphenamine could not be evaluated because of the inadequate dosage.

Whereas tularemic manifestations in the pharynx are not common either early or late in the course of the disease, the possibility of this disease should be borne in mind in districts such as Virginia, where tularemia is prevalent.

SUMMARY

In a case of tularemia with primary ulcerations in the pharynx and bilateral cervical adenopathy, the inoculation presumably occurred from crushing an infected dog tick and carrying the organisms to the mouth on the fingers.

GONOCOCCIC ENDOCARDITIS

REPORT OF A CASE WITH POSITIVE BLOOD CULTURE

ISIDOR COHN, M.D.

BROOKLYN

Although a number of cases of acute bacterial endocarditis caused by the gonococcus have been reported in the past few years, the proved cases are still few enough, especially in view of the prevalence of gonorrhea, to make this condition a comparative rarity and to justify the report of this case.

Hoffman and Taggart,¹ reporting a case in 1932, reviewed the literature for the past decade and could find only nineteen cases reported, of which they regarded only eight as proved. Their criteria of proof were a positive blood culture *intra vitam* or a post-mortem culture from the heart valve. Positive smear from a heart lesion, without culture, they regard as only presumptive evidence and a positive complement fixation alone as questionable, since the genital infection alone would give this and it is therefore no proof by itself of gonococcal sepsis or endocarditis. Using less rigid standards, Eric Stone² in 1934, in a thorough search of the literature, found 122 cases reported with sufficient data to be critically studied. Of these only eighty-five could be regarded as proved cases in which blood or valve cultures were positive, or cultures were sterile but valve smears positive and there was a concomitant or very recent gonorrhea. In fact, acute bacterial endocarditis is itself an uncommon condition, occurring, according to White,³ as only 1 per cent of all types of endocarditis, and he quotes Thayer's table of 199 cases, of which only 11 per cent were caused by the gonococcus.

In only thirty-four of the cases analyzed by Stone was the blood culture positive, and this is the only proof of diagnosis clinically. However, the diagnosis may

From the Department of Medicine and the Department of Laboratories of the Jewish Hospital of Brooklyn.

¹ Hoffman, A. M. and Taggart, F. C. *Gonococcal Endocarditis* Ann. Int. Med. 5: 397 (May) 1932.

² Stone, Eric. *Gonorrheal Endocarditis* J. Urol. 31: 869 (June) 1934.

³ White, Paul. *Heart Disease* New York: Macmillan Company, p. 343.

safely be presumed when a patient presents the picture of ulcerative endocarditis and gonorrhea, even though the cultures remain sterile, for blood culture as the sole criterion of diagnosis in this condition is unreliable, owing to the difficulty of growing this fastidious organism on artificial mediums. As on culture mediums, the organism is often fragile on distant foci and is quickly displaced by secondary pyogenic invaders, so that it may not be demonstrable on smear or section of the infected valve. When an ulcerative endocarditis follows or is concomitant with a genital infection, therefore, the diagnosis of gonococcic endocarditis may justly be considered, in fact, sterile blood cultures, ruling out the usual bacteremic organisms, are almost as good evidence of the etiologic agent of the sepsis as a positive culture. In some cases, however, there may be no detectable evidence of genital infection at the time of the endocarditis, and many months may have passed since its occurrence. In such cases the absence of bacteriologic confirmation obviously precludes the possibility of diagnosis, and there are possibly a number of cases so missed.

Gonorrheal endocarditis is always secondary to infection of the genital tract, usually during or shortly after the primary infection. This is often mild, there is apparently little local tissue resistance, so that, instead of a barrier as in the usual case, there is a portal for early dissemination. In only a few of the cases analyzed by Stone could it be determined just when blood stream invasion had occurred, as shown by sudden chill, followed by hyperpyrexia and rapid development of the typhoid state. The usual onset is insidious, being masked by the appearance of some gonorrheal complication, most often polyarthritis. The frequency of association of arthritis and endocarditis forces the assumption that the polyarthritis is itself a manifestation of bacteremia (which is therefore a not infrequent occurrence) and that there is necessary only a locus minoris resistentiae, in the form of a damaged or congenitally defective endocardium, to permit the development of gonococcic endocarditis. It is only in the exceptional case of bacteremia that gonococcic endocarditis develops on a normal endocardium, as there have been reported many cases of gonococcic bacteremia with recovery that gave no previous history of a cardiac lesion and showed none after recovery.

The usual onset of septicemia is in the second or third week of genital infection, although, as previously noted, and as in the present case, it may occur at any time or even when there is no sign of local infection. As about 90 per cent emerge from cases of gonorrheal arthritis, all cases of joint involvement should be watched for this complication. The earliest signs are unduly high temperature during the course of the arthritis, persistence of high temperature while the arthritis is subsiding, or sudden hyperpyrexia with wide fluctuations, with or without chills, as articular symptoms are lessening.

The local endocardial lesions are rapidly destructive, and therefore signs of valvular damage appear early. In some cases, death may follow very soon after the development of the murmurs—within five days, in two cases reported by Peters and Horn.⁴ After vegetations appear, further complications, as in any other form of acute bacterial endocarditis, may arise—embolic phenomena, pneumonia, pleurisy. Nephritis is very com-

mon. Most cases end fatally, usually within a short time, but about one third run a course of two months or more.

REPORT OF CASE

A man, aged 38, was admitted Nov 6, 1935 complaining of fever and joint pains. He had been perfectly well until the onset of the present illness, which began with headache, malaise, slight chill and fever, two and one-half weeks before admission. On the fourth day, while going to the bathroom, he fainted and fell, bruising the right elbow and both knees. Shortly after this he began to have pain in both knees, and pain, redness and swelling of the right elbow. These joint symptoms subsided after a few days of baking, except for occasional recurrence of pain. He remained in bed, the temperature ranging from 101 to 104 F. One week before admission he had a severe chill and a subsequent temperature of 104, a second chill the day before admission, and another on the day he entered the hospital.

His previous history was essentially negative, except for two attacks of peritonsillar abscess and several attacks of grip. There was no knowledge of rheumatism, of any cardiac lesion or of venereal infection.

The patient was well nourished, quite pale, dyspneic, and apparently acutely ill. The pharynx was markedly injected, the tonsils were cryptic and there was no exudate. There was some submaxillary adenitis. The heart was normal in size, the sounds were of fair quality and regular, and there was a questionable impurity of the first sound at the apex. The lungs were clear, the abdomen was moderately distended but otherwise normal. The extremities showed normal articulations and arterial pulsations. The external genitalia were normal, rectal examination revealed a prostate about 50 per cent enlarged, smooth and elastic, and the right seminal vesical distended but soft and not tender.

The urine showed a faint trace of albumin, the white blood count was 22,000, with 87 per cent polymorphonuclears, the red count was 4,000,000. Hemoglobin was 76 per cent. The sedimentation rate was 73 mm in one hour. Blood chemistry figures were normal. The Kline test was negative. Blood culture was sterile.

The patient had a chill lasting thirty minutes the next day, during which he was cyanotic and very dyspneic, the temperature going to 105, and another at 5 p m. On the fourth night he suddenly complained of numbness and pain in the right leg. Examination showed that the right femoral artery was palpable, but from there down no pulsation was felt and the leg was cold and cyanotic. There had evidently been an embolic closure at the level of the popliteal artery.

The questionable blow at the apex was now noted to be a definite systolic murmur, transmitted upward toward the pulmonic area. The next day the leg had apparently recovered to a great extent, in that it felt warm and the pallor and cyanosis had disappeared. Palpation and oscillometry, however, showed that the artery was still occluded. The surgical consultant saw no threat of gangrene, as there was apparently sufficient collateral circulation, and advised passive vascular exercise, which was instituted.

He continued to have chills at somewhat irregular intervals, usually about forty-eight hours, a temperature of from 101 to 103, with rises as high as 108 after the chills, progressive anemia, and a leukocytosis of from 22,000 to 26,000. Red and white cells and casts began to appear in the urine, coincident with increasing albuminuria. Complement fixation tests for gonorrhea were reported positive November 16 and 27, blood cultures were sterile on several examinations. Agglutination tests for *Brucella melitensis* were negative, but Widal tests were reported positive in a dilution of 1:80 November 23 and December 2. In view of the fact that the patient had been inoculated against typhoid some years before and that in the presence of fever an existing low antibody titer may be increased the test was repeated to higher dilutions and found positive 1:160.

November 26, twenty days after admission, two petechial spots with white centers were noted on the palate and a few days later several were seen on the conjunctivae and trunk. The patient was becoming very much weaker, at times drowsy, and apathetic. December 3 a new embolic area appeared in the left

⁴ Peters H. L. and Horn Benjamin. Malignant Ulcerative Gonococcic Endocarditis. J A M A 102: 1924 (June 9) 1934.

foot, with absent dorsalis pedis pulsation, and the general condition became much worse, with fatal termination December 4

The last blood culture had been taken December 2 and four days later began to show about twenty colonies, examination of which showed gram-negative diplococci, culturally *Neisseria gonorrhoea*

The anatomic diagnosis at the postmortem examination was ulcerative endocarditis of the mitral valve, infarcts in the spleen and kidneys, petechial hemorrhages of the skin, acute bilateral nephritis, dilatation of the right ventricle, and passive congestion of the viscera. The essential changes in the heart were petechial hemorrhages in the pericardium, measurements of 11 cm from apex to base, and 10 cm at the base. The right side was normal. The left atrium contained some clots, the foramen ovale was closed, the auriculoventricular orifice was 8.5 cm in circumference, the valves were thickened, stiff and ulcerated. Attached to the free margin of both cusps were cauliflower-like vegetations. The ventricular wall was 2 cm thick and flabby. The aortic orifice was 6 cm in circumference. The heart weighed 410 Gm.

Microscopic examination disclosed that the myocardial fibers were of good size, the nuclei stained well. Intermuscular connective tissue was not increased. The surface of the mitral valve was covered with fibrin and polymorphonuclear cells. The deeper layers were made up of homogeneous, pink-staining material, in which occasional spindle-shaped cell nuclei were seen. There were accumulations of polymorphonuclear cells in the deeper layers. In the base of the valve and the nearby thickened endocardium there was a dense infiltration of polymorphonuclear and mononuclear cells. In a preparation stained by Gram's method, granules were seen in several of the cells of the exudate, but no definite bacteria.

The seminal vesicles contained a thick, cloudy fluid, the prostate measured 4.5 by 2.5 by 2.5 cm., the cut surface was yellow and homogeneous, microscopic examination was negative.

COMMENT

This case presents several unusual features, which illustrate the difficulties often encountered in arriving at a diagnosis. In fact, were it not for the positive blood culture, in itself a rather rare observation, the diagnosis could not have been made, for there was no history nor anatomic evidence of gonorrhea except possibly the enlarged prostate and seminal vesicle. The positive complement fixation was contradicted by the equally positive Widal, so that the serologic reactions only confused the clinical picture, and the postmortem examination, while confirming the clinical diagnosis of ulcerative endocarditis, gave no hint of etiology.

There was no evidence of previous cardiac damage or defect, so that this is one of those exceptional cases in which gonococci, invading the blood stream, have caused inflammation of a normal endocardium.

Although the demonstration of gonococci in the valve would have been further evidence in this case, the failure to do so is explained by the fact that no active search was made for them until after the report of the last blood culture, by which time these fragile organisms could readily have been replaced by the secondary invaders found on culture—*B. coli* and *Staphylococcus aureus*.

This case also illustrates the importance of repeated blood cultures, and it is interesting that growth was finally obtained on ordinary Savita agar and bouillon, after failure with special mediums.

1623 Avenue P

Chromophobe Adenomas—Operations for these chromophobe adenomas are undertaken largely to preserve vision for the expanding lesion stretches and distorts the overlying optic chiasm—Cushing Harvey "Dyspituitarism" Twenty Years Later in The Harvey Lectures Baltimore Williams and Wilkins Company 1934

Clinical Notes, Suggestions and New Instruments

AN UNUSUAL FOREIGN BODY (BONE PEG) IN THE BLADDER

OWSLEY GRANT M.D. LOUISVILLE, K1

A woman, aged 56, fell on the stairs and injured her left hip, Oct. 9, 1934. She had no especial medical attention until October 14, when she was admitted to the hospital. Examination showed inversion and adduction of the left thigh, with some shortening, there was no active motion of the left leg, but passive motion of the hip joint was extremely painful. X-ray examination showed an intracapsular fracture of the left femur. Two days later the left trochanter was exposed, the capsule severed, and under direct vision a beef-bone peg inserted

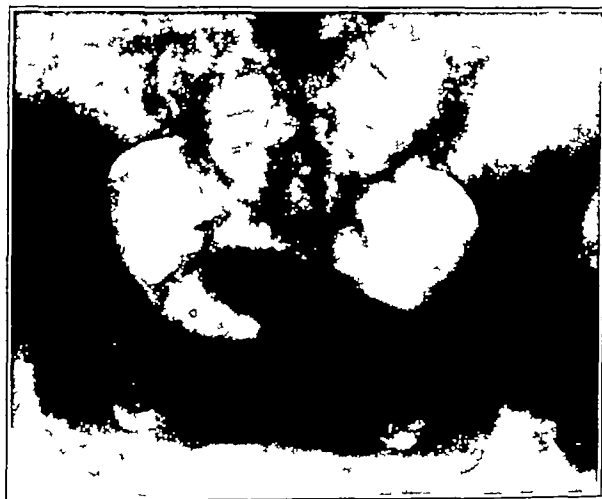


Fig 1—Bone peg surrounded by calcification in bladder six months after insertion in left hip

through the trochanter and on into the head of the femur, holding the two in apposition. There was no perforation of the acetabulum.

There developed some moderate infection at the operative site. This infection was not severe and did not make itself evident until a week after the insertion of the peg. At that time an abscess about the wound was opened and pus evacuated. The patient remained in the hospital for three and one-half weeks, and the temperature still did not subside to normal. After removal to her home, the patient was under the care of

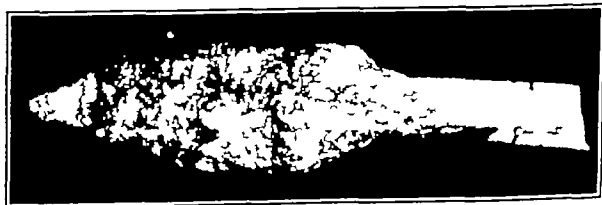


Fig 2—Bone peg after removal from bladder showing calcareous deposit.

the orthopedic surgeon. Her next symptoms were a very marked gastro-intestinal irritation and distention of the colon. These were so marked at one time as to raise the question of obstruction. This persisted for several weeks but subsided gradually.

Four months after discharge from the hospital, bladder irritation began and blood and mucus appeared in the urine. Two weeks of irrigation did not improve this condition and she was referred for cystoscopy. Because the patient had had some vesical disturbance even prior to operation and considering the character of the urine, a malignant condition was suggested. The bladder capacity was very small, 1½ ounces (45 cc.). The

inflamed walls seemed to surround a large, irregular, fungating mass lying in the center of the bladder. The nature of the surface of this mass was not specifically clear, it appeared to be calcification in some portions and in others that of neoplasm. A roentgenogram was then taken, which revealed the unusual picture seen in figure 1.

The bone peg was pictured migrating apparently on the same axis as that on which it had been inserted in the hip, and on about one-half its length there was evidence of a heavy deposit of salts. The bladder was opened suprapubically and it was found that the pointed end of the peg was just beginning to perforate the right wall of the bladder and that by manipulation the peg could be easily loosened and removed. On the left side a sinus extended from the bladder to the head of the femur, which could be readily palpated from the bladder. No endeavor was made to excise this sinus, which was simply curetted and the bladder then closed about a Pezzar catheter. The patient made an uneventful recovery and has now good use of both legs although the left is a little shorter than the right.

One can only estimate the length of time it took the peg to travel this course. From the amount of calcareous deposit, it must have been in the bladder for some time. Since it was six months between the insertion of the peg and its removal, and about one half of that period had elapsed after insertion of the peg before any bladder symptoms manifested themselves, it would appear that it required about three months for the point of the peg to travel from the left acetabulum to the point where it penetrated the left wall of the bladder.

801 Huxburn Building

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF DRUGS IN THE TREATMENT OF ANEMIA

MAURICE B. STRAUSS, M.D.

BOSTON

This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED

The past two decades have witnessed radical changes in the management of anemia. Previously treatment for all types of anemia consisted chiefly in general hygienic measures, fresh air, nutritious food, iron and arsenic to "stimulate" the bone marrow, and transfusion of blood when necessary. Today diagnosis of the specific type of anemia is of primary importance. It is recognized that anemia occurs either because of loss or increased destruction of blood, or because of decreased formation of blood. If anemia results either from acute loss or from increased destruction of blood, drug or diet therapy will be of no avail. Decreased formation of blood may be the result of nutritional deficiency or of other disturbances of the blood-forming organs. If it is due to the former, the administration of the substances specifically lacking will be followed by increased blood formation, if to the latter, such treatment is useless. The successful treatment of anemia, therefore, depends essentially on exact diagnosis. If there is doubt as to the nature of the anemia, the time

to establish the diagnosis is before, not after, the blood picture has been obscured by indiscriminate therapy. The following tabular classification of anemias on an etiologic basis will be adhered to in the consideration of therapy.

CLASSIFICATION OF ANEMIAS

- 1 Anemia due to acute blood loss
- 2 Anemias due to increased blood destruction.
 - (a) Extrinsic causes: chemicals, infections, as malaria, hemolytic streptococci, and so on
 - (b) Intrinsic causes, as hemolytic jaundice, sickle cell anemia and paroxysmal hemoglobinuria
- 3 Anemias due to decreased blood formation from nutritional deficiency
 - (a) Pernicious and related macrocytic anemias (sprue, pregnancy, pellagra, gastro-intestinal disturbance)
 - (b) Hypochromic anemias of all types (including that due to chronic blood loss)
 - (c) Anemia due to deficiency of vitamin C
 - (d) Anemia due to deficiency of thyroid secretion
- 4 Anemias due to decreased blood formation from disturbances of blood-forming organs
 - (a) Toxic: benzene, nitrogen retention, chronic sepsis, and the like.
 - (b) Physical: radiation
 - (c) Mechanical: metastatic carcinoma of bone marrow, Hodgkin's disease, leukemia and other conditions
 - (d) Idiopathic disturbances of blood-forming organs, "aplastic," Cooley's, splenic, hepatic, congenital anemias

ANEMIA DUE TO BLOOD LOSS

The fundamental point in the treatment of anemia of blood loss obviously lies in bringing about the cessation of bleeding, whether this is acute or chronic. In acute hemorrhage the immediate effects are due to the reduction of the blood volume rather than to anemia. The reduction in blood volume varies with the amount and rate of blood loss and, if severe, requires treatment by the prompt transfusion of blood. The immediate intravenous infusion of physiologic solution of sodium chloride or 5 per cent dextrose solution is of value until blood can be obtained for transfusion. However, in any type of chronic blood loss, and in many instances of severe acute hemorrhage, adequate therapy must, in addition, be instituted to promote the formation of new hemoglobin. If a surgical procedure of any magnitude is necessary to stop chronic blood loss, it is desirable at least partially, to alleviate the anemia and associated deficiency state preoperatively. Measures to accomplish this will be considered under the therapy of hypochromic anemia.

ANEMIA DUE TO INCREASED BLOOD DESTRUCTION

The proper treatment of anemia due to blood destruction lies in removing, whenever possible, the cause. If due to chemicals, their ingestion or exposure to them must be stopped. If due to infections, therapy must be directed to the removal of the offending organisms. In sickle cell anemia no therapy other than supportive measures, such as transfusion, is of value. In chronic hemolytic jaundice, particularly of the hereditary type, splenectomy may be of great benefit. In other chronic hemolytic anemias, particularly if splenomegaly is present, the removal of this organ may be of value. Since there is a conservation of blood-building materials in the hemolytic anemias, little or no deficiency of such materials occurs. Therefore therapy with iron or liver preparations is not indicated, although after the cause of hemolysis has been removed the use of iron may possibly hasten the return of the blood to normal.

ANEMIAS DUE TO NUTRITIONAL DEFICIENCY

In the anemias due to nutritional deficiency, therapy properly administered has its most brilliant successes.

(a) *Pernicious Anemia*—In the treatment of pernicious anemia, preparations of liver or stomach are to be employed. The available products are Extract of Liver, U S P XI, Solution of Liver, U S P XI, Stomach (Dried Stomach), U S P XI, stomach-liver combination (Extralain, N N R) and Purified Solution of Liver, U S P XI. The first four are for oral administration only, the last is for parenteral use. Provided an amount of such material can be and is employed which is adequate for the individual case, it is a matter of little moment as to which preparation is used. Normal erythropoiesis is possible only when the necessary building stones supplied by such preparations are available. None of these substances have any general "stimulating" effect on the bone marrow. Before prescribing one of the preparations in any given case it is therefore of paramount importance to determine that it is the type of material needed. "Shotgun" therapy is to be deplored for a number of reasons. Most mixtures of substances fail to contain enough of any one ingredient to give maximal effects. The patient must pay not only for the material he needs but also for nonessentials. Mixed therapy may so cloud the clinical picture that accurate evaluation of subsequent therapeutic needs becomes impossible. Most patients with addisonian pernicious anemia require lifelong treatment, whereas the majority of patients with anemia due to iron deficiency, once well, will remain well unless the original cause is reestablished. Therefore, if a patient, not definitely known to have pernicious anemia, receives both liver and iron and recovers, no conclusion can be drawn as to which was the effective substance. If both should now be stopped, the patient, should he have pernicious anemia, will sooner or later relapse. In addition, he runs the risk that his relapse may be essentially neurologic and may advance to the stage of irreparable spinal cord injury before the nature of the condition is recognized. On the other hand, if the anemia is of the iron deficiency type and therapy with both liver and iron is continued, the patient is subjected to the expense and inconvenience of taking an unnecessary liver preparation.

It has been stated that it matters little which of the materials effective in pernicious anemia is employed in treatment if the amount used is adequate. Adequate therapy does not mean usual or average. It implies that a sufficient amount of material be administered not only to restore to and maintain the blood at normal in all respects but also to relieve or arrest all the signs and symptoms of the deficiency state. Pernicious and the related macrocytic anemias are diseases that may involve not only the hematopoietic but also the gastrointestinal and neural systems. Vague "indigestion," soreness of the mouth or tongue, diarrhea, even attacks closely simulating gallbladder disease may be symptoms of the deficiency state of pernicious anemia. Minot has shown that in one third of all patients with pernicious anemia it is these symptoms which are prominent at the onset. Anemia may be slight or absent at this stage. Furthermore, when relapse occurs because of inadequate treatment the symptoms may be predominantly gastro-intestinal with minimal blood changes. The neural changes of pernicious and the related anemias may simulate tabes dorsalis, spastic paralysis or simple polyneuritis. They may occur in the absence of anemia. It is obvious from a consideration of the

nature of lesions within the central nervous system that repair of completely degenerated neurons is impossible. However, adequate therapy should and does completely arrest the progress of the lesion. Reeducation in muscular coordination may enable remarkable improvement in function to appear.

The precise procedure to be followed when the diagnosis of pernicious anemia has been established depends on the factors present in the individual case. Transfusion of blood is indicated if "air hunger" or signs of circulatory failure are present at rest in the severely anemic patient. There should immediately be injected intramuscularly 10 units¹ of Purified Solution of Liver. This should be repeated on the next two days and then at weekly intervals until the blood values are normal. It is immaterial whether the 10 units is administered in a single injection or in divided doses. If transfusion is not required, the same routine of liver therapy should be followed for the severely anemic patient. When the patient with pernicious anemia first presents himself with relatively high blood values, i. e., 3,000,000 red blood cells per cubic millimeter or higher, the weekly intramuscular administration of 10 units of Purified Solution of Liver will generally suffice to bring about complete remission of the anemia. In general, parenteral therapy is preferable for the severely anemic patient, particularly as it may be exceedingly difficult to administer an adequate amount of potent material by mouth. Once the erythrocyte response has been well established, however, or if the patient is only moderately anemic when first seen, oral therapy may be employed. A minimum of 10 units of potent material should be given weekly in divided daily dosage until the blood values reach normal. Not infrequently it will be found that the red blood cells will rise steadily from low levels to the neighborhood of 4 million per cubic millimeter with such dosage but that larger amounts of potent material must be administered in order to raise the count to 5 million per cubic millimeter.

Therapy, whether oral or parenteral, with a minimum of 10 units a week should be continued in all cases for at least six months after the blood values have been normal and all other symptoms of the deficiency state have disappeared. Following such a period, one may cautiously proceed to determine the maintenance dose. It is to be emphasized that treatment must never stop in pernicious anemia. Frequently after twelve months of entirely normal existence and blood values it is safe to reduce the dose by half, that is, to 5 units weekly. If injections are employed, the most convenient practice is to administer 10 units every fortnight. If at the end of twelve months on such dosage the patient remains in perfect health, the erythrocytes number 5 million per cubic millimeter or more, and the color index and mean corpuscular volume are normal, one may try a further reduction to 10 units in three weeks or, in some cases, in four weeks. Although many patients may continue satisfactorily with as little material as this, it is to be emphasized that this does not generally occur.

When there is definite evidence that subacute combined degeneration of the spinal cord is present, therapy must be directed at this lesion. It is, of course, essential that sufficient potent material be administered to maintain the blood in an entirely normal condition, but this

1. The Committee of Revision of the U. S. Pharmacopeia has approved the labeling of antianemia preparations in terms of units. A unit is the amount of material which when given daily either by mouth or by injection has been shown in the opinion of the Advisory Board to produce satisfactory reticulocyte rises and increases in erythrocytes and hemoglobin in patients with addisonian pernicious anemia.

is not the factor which should determine the amount to be given. A considerable number of patients will show advancing cord lesions in spite of normal blood levels. These patients must receive sufficient material to arrest completely all progress of the cord degeneration. It has been unequivocally established that such arrest can be achieved if sufficient amounts of liver extract are employed. For this purpose certain individuals may require as much as 5 units daily, an amount that it is almost impossible to administer over a period of months and years by mouth. Accordingly intramuscular injection of Purified Solution of Liver is the treatment of choice. A minimum of 35 units should be injected during the first week and at least 10 units a week thereafter. If arrest of the degeneration is not evident within a month this weekly dose should be doubled. The dose that is found adequate to arrest the lesion should be continued for at least a year and then reduced only with great caution since relapse may be rapid in onset and result in irreparable neural damage before increased therapy again controls the degeneration. It must be borne in mind that patients with pernicious anemia without neural involvement may develop cord degeneration at any time. This may occur even during treatment if insufficient material for the particular individual is being given. Careful neurologic examinations should therefore be made at frequent intervals, and any change for the worse in even a single symptom or sign should be a signal for immediate increase in the amount of therapy.

A certain number of patients presenting themselves with classic pernicious anemia will show definite evidences of iron deficiency during adequate therapy for their primary condition. This manifests itself usually after the erythrocytes have reached 3 million or more per cubic millimeter by a lag in hemoglobin production, the color index falling below unity. Treatment as outlined under hypochromic anemia should then be given in addition to therapy with liver or stomach preparations.

Macrocytic Anemias Related to Pernicious Anemia. Macrocytic anemia of the tropics encountered in association with sprue and pregnancy is to be treated essentially as has been outlined. However since iron deficiency is so common in both these conditions adequate therapy for this should be instituted as soon as evidence for its presence is manifest. The same is true for the pernicious (macrocytic) anemia of pregnancy of the temperate zone, and the macrocytic anemia of pellagra. In all these conditions dietary measures alone may suffice to bring about relief of the anemia, because many such patients retain their ability to secrete Castle's gastric factor and hence lack only the dietary or extrinsic factor. As it is a difficult procedure to determine the exact mechanism in an individual case, and as the therapy outlined is satisfactory no matter what the exact mechanism of the deficiency, it is to be recommended for all such patients. In most cases of sprue it appears advisable to continue lifelong treatment as in pernicious anemia. This is likewise true for the macrocytic anemias associated with pathologic conditions of the gastro-intestinal tract such as idiopathic steatorrhea, stenoses and anastomoses, and chronic ulcerative colitis. In the other types of macrocytic anemia, treatment may frequently be omitted following recovery, provided the precipitating factors do not recur (as pregnancy or faulty diet). In all of these anemias much larger amounts of liver or stomach preparations than the usual requirement in pernicious

anemia are frequently necessary. In certain instances of sprue an original dosage for a week or more of 10 or more units daily given by intramuscular injection may be necessary to control alimentary tract symptoms. In any type of macrocytic anemia discussed resort to parenteral therapy may turn failure or partial success with oral therapy into a satisfactory result because of the convenience of giving large dosage of active principle by the former method.

(b) Hypochromic Anemia.—Iron in suitable form is the essential and most useful therapeutic agent in these conditions irrespective of whether prolonged faulty diet improper assimilation or chronic blood loss is the chief etiologic agent bringing about the condition. Copper and other metals have not been proved of clinical value. Some of the official preparations of iron with the approximate daily dose necessary to secure maximum effects are Reduced Iron 3 Gm (45 grains), Mass of Ferrous Carbonate 4 Gm (60 grains), Pills of Ferrous Carbonate 4 Gm (60 grains), Iron and Ammonium Citrates 6 Gm (90 grains) and Ferrous Sulfate 1 Gm (15 grains) the dose calculated on the weight of the anhydrous salt.

The first three are relatively insoluble the last two freely soluble. When these doses are employed there is little difference in the efficacy of the various preparations although it is possible that in the presence of achlorhydria the soluble forms are superior. From the point of view of convenience to the patient the smaller effective dosage provided by ferrous compounds is an advantage. Preparations can be administered in capsules or coated tablets. Elixirs and syrups are useful vehicles for the treatment of small children. Iron should be administered daily in divided doses immediately after meals in order to minimize gastric irritation. It is rarely if ever necessary to administer iron parenterally. Should disturbances of the enteric tract be so severe that iron cannot be given by mouth from 0.1 to 0.2 Gm of Green Iron and Ammonium Citrates, U. S. P. XI, may be injected intramuscularly daily. However, marked local and systemic reactions not infrequently occur. Smaller doses of this or any other iron compound are of no significant value. Since the maximum gain in hemoglobin following the injection of iron is limited by the amount injected calculated as metallic iron organic compounds of iron offer no advantages. The smaller dose of Green Iron and Ammonium Citrates given corresponds to 16 mg of Fe and can contribute to the manufacture of but 0.6 per cent of hemoglobin in an average size adult. Thirty such injections must therefore be given to raise the hemoglobin by 20 per cent. It is to be emphasized again that iron, like liver, has no "stimulating" effect on blood formation and accordingly such injections will raise the hemoglobin only if the anemia is due to a deficiency of available iron within the body.

In certain cases of "iron deficiency" anemia there appears to be an inability on the part of the patient to obtain sufficient iron from an adequate intake of food iron. Such individuals and those with constant losses of iron (chronic bleeding, pregnancy and so on) should continue maintenance doses of iron, approximately one-third to one-half the amounts stated. Other patients ordinarily require no further therapy after the blood values are normal. Certain patients with hypochromic anemia may suffer from a partial deficiency of other materials necessary for the manufacture of the hemoglobin molecule. There is evidence that the daily administration by mouth of 200 Gm of whole liver or

the Whipple "secondary anemia fraction" derived from such an amount of liver will cause blood regeneration in certain cases of hypochromic anemia, especially when chronic blood loss is the dominant etiologic factor. However, the amount of material necessary for effectiveness comparable to that of iron preparations in small quantity makes the use of either whole liver or the Whipple fraction of little clinical value. In combination with iron such a liver fraction can be regarded only as a relatively inert and bulky component of the preparation.

(c) *Anemia Due to Deficiency of Vitamin C*—The daily administration of 6 ounces of orange juice or 100 mg of cevitamic acid (N N-R) is sufficient to alleviate the type of anemia due to deficiency of vitamin C, which occasionally occurs in association with scurvy.

(d) *Anemia Due to Deficiency of Thyroid Secretion*—This usually mild anemia is relieved by the administration of the amount of thyroid substance that will raise the basal metabolic rate to the normal range. In certain instances more severe anemias occurring with associated deficiencies of either iron or liver extract" may require treatment as outlined in the preceding sections.

ANEMIA DUE TO TOXIC INHIBITION, PHYSICAL INJURY OR MECHANICAL INTERFERENCE WITH THE BLOOD-FORMING ORGANS

In all anemias due to toxic inhibition, physical injury or mechanical interference with the blood-forming organs, therapy must be directed essentially at the underlying cause of the anemia. Transfusion of blood may be of significant temporary benefit but has no specific effect. Iron, liver, stomach and so on are usually of no value but may be employed in maximal doses in order to alleviate any associated deficiency state. If the daily intramuscular injection of 5 units of Purified Solution of Liver for ten days does not produce a significant reticulocyte response, the possibility of pernicious anemia being present is minimized.

IDIOPATHIC DISTURBANCES OF THE BLOOD-FORMING ORGANS

In general, idiopathic disturbances of the blood-forming organs are not amenable to drug therapy. Certain types of congenital anemias of infants are cured by repeated transfusions. Cooley's anemia and "aplastic anemia" may be temporarily benefited by transfusion of blood. The macrocytic anemia of liver disease does not respond to any form of therapy unless there is an associated deficiency either of iron or of liver extract". It is accordingly worth while to employ a therapeutic test with each of these substances in such cases.

Splenic anemia (Banti's syndrome) very frequently is hypochromic in variety and due to a virtual deficiency of iron, in which case iron therapy is of distinct value. In many instances, however, no treatment is of any avail.

CONCLUSION

Anemias may be divided for therapeutic purposes into two main groups, those due to nutritional deficiency and those due to other causes. The anemias of the first group respond brilliantly to the administration of the proper therapeutic agents whereas for those of the second group there is no specific drug therapy. Diagnosis is of primary importance in defining the nature of the treatment and the results to be expected from it.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

ULTRATHERM, MODEL G, ACCEPTABLE

Manufacturer: Adlanco X-Ray Corporation, New York

The Ultratherm, Model G, is recommended for medical and surgical diathermy. It is a one-tube machine with a fixed wavelength of about 6 meters. The output of the machine is controlled by means of a rheostat to govern the voltage on the filament. There is a tuning condenser in the patient's circuit so that it can be brought into resonance. For the treatment of patients, different sized electric field electrodes with different air-gap distances or felt layers are used and are provided as regular equipment.

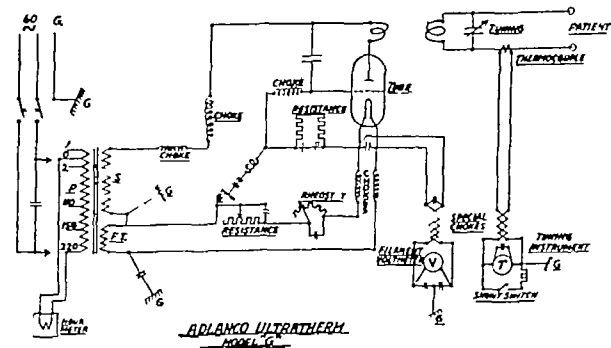
When this machine is operated under full load it draws approximately 1,000 watts. Since no reliable method has been proposed to measure the output of energy available to the patient, the value is not given.

The manufacturer submitted evidence intended to substantiate the claims made for the unit. Five-inch glass air-gap electrodes were anteriorly applied to determine whether these electrodes used on the machine were effective in producing heat within the tissues of a thigh of a human subject.

Three vigorous adult male medical students ranging from 150 to 180 pounds were used for the experiments. Two trocars placed in hard rubber cannulas were inserted into the thigh. One was inserted midway between Poupart's ligament and the knee and straight down into the depth of the muscular tissue until the instrument was at an approximate depth of 2 inches, or until the femur was encountered. The second was introduced as nearly parallel to the skin as possible and subcutaneously at an approximate depth of one-eighth inch. The trocars were removed, leaving the rubber cannulas in situ. Temperature measurements were then taken by means of thermocouples of the hypodermic needle type and introduced through the cannulas. The constant junction was immersed



Adlanco Ultratherm Model G



Schematic diagram of circuit.

in ice enclosed in a quart vacuum bottle. The electromotive force due to the difference in temperature of the junctions was read in millivolts from the Leeds and Northrup portable potentiometer. The thermocouples were calibrated in degrees Fahrenheit against a Bureau of Standards certified thermometer. Initial temperatures were taken and then each subject was submitted to a twenty minute application of maximum current intensity consistent with skin comfort. At the end of this period temperatures were again recorded until the temperature began to drop. The highest temperature attained was recorded as final temperature in each instance. Oral temperatures also were taken.

The glass air-gap electrodes were placed anteriorly (in the same plane) on the thigh equidistant from the cannulas. The

distance between electrodes, center to center, was about 9 to 11 inches. The distance from the skin to the metallic electrode (inside the glass) was about $1\frac{1}{4}$ inches.

Each reading that follows is the average of six observations obtained on the glass air gap electrodes, applied anteriorly, that is, in the same plane.

Deep Muscle Temp F		Subcutaneous Temp F		Oral Temp F	
Init	Final	Init	Final	Init	Final
98.9	106.6	97.4	105.2	98.7	99.1

It is interesting to note that application of the electrodes on the upper surface showed a substantial rise in temperature, whereas the application of the electrodes posteriorly to the thigh—one distal to the buttocks and the other proximal to the knee—did not show as high a temperature rise. With the electrodes adjusted laterally, i. e., one on the medial aspect of the thigh and the other on the lateral aspect the temperature rises were not as high as those obtained with the anterior application.

The results indicate that the temperature rise, with use of the aforementioned method of application, is considerably above what can be expected from the application of conventional diathermy—with a metal electrode on the medial aspect of the thigh and another metal electrode on the lateral aspect of the thigh—the method of application that has been adopted as a minimum standard of acceptance.¹

The temperature rise of the transformer after the machine had been operated at full load for two hours, came within the limits of safety prescribed by the Council. The shipping weight of the apparatus is about 200 pounds. Burns may be produced but may be avoided by ordinary precaution. Their likelihood to occur is much less than with conventional diathermy.

The machine was installed in a clinic acceptable to the Council and operated under actual clinical conditions. It was reported as giving satisfactory service. In view of the favorable report based on the performance of this unit when glass air-gap electrodes, applied anteriorly, were used the Council on Physical Therapy voted to include the Ultratherm, Model G, in its list of accepted devices.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary

LIBBY'S LOGANBERRY JUICE, DILUTED AND UNSWEETENED

Manufacturer—Libby, McNeill & Libby, Chicago

Description—Canned loganberry juice

Manufacture—Mature loganberries are washed and the juice is extracted mechanically, clarified, and sugar syrup is added. The sweetened juice is filled into cans, processed under vacuum, and cooled.

Analysis (submitted by manufacturer)—Moisture 83.1%, ash 0.2%, fat (ether extract) 0.01%, protein (N \times 6.25) 0.2%, total sugars 15.0%, crude fiber a trace, carbohydrates other than crude fiber (by difference) 15.3%, total acidity (as malic acid) 1.2%, pH 3.02, sodium (Na) 0.024%, potassium (K) 0.084%, calcium (Ca) 0.008%, magnesium (Mg) 0.009%, iron (Fe) 0.0004%, phosphorus (P) 0.005%, sulfur (S) 0.002%, chlorine (Cl) 0.013% and iodine (I) 0.02%.

Calories—0.62 per gram, 17.6 per ounce

Claims of Manufacturer—A wholesome canned fruit juice

¹ Mortimer Bernard and Osborne S. L. Tissue Heating by Short Wave Diathermy J. A. M. A. 104:1413 (April 20) 1935

SEXTON BRAND WHOLE BEETS, WATER PACKED

Manufacturer—John Sexton & Company, Chicago

Description—Canned whole beets, packed in water

Manufacture—Beets are washed, graded, precooked to loosen the skins, mechanically peeled, inspected again graded and filled in cans. The cans are filled with water, sealed and processed at 113 C.

Analysis (submitted by manufacturer)—(Analysis of entire contents including liquid) moisture 87.2% total solids 12.8%, ash 0.51%, fat (ether extract) 0.1%, protein (N \times 6.25) 1.5%, crude fiber 0.92%, carbohydrates other than crude fiber (by difference) 9.8%.

Calories—0.46 per gram, 13 per ounce

Claims of Manufacturer—Choice quality whole beets packed in water without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

- (a) LIBERTY BRAND CRYSTAL WHITE SYRUP
- (b) LIBERTY BRAND GOLDEN SYRUP

Distributor—G. H. Wetterau & Sons Grocer Company, St. Louis

Packer—Union Starch and Refining Company, Granite City, Ill.

Description—(a) A table syrup, corn syrup sweetened with sucrose flavored with vanilla extract—the same as Pennant Crystal White Syrup (THE JOURNAL, Jan 30, 1932, p. 403).

(b) A table syrup, corn syrup flavored with refiners' syrup—the same as Pennant Golden Table Syrup (THE JOURNAL, Jan 30, 1932, p. 403).

Claims of Manufacturer—For table use and as a carbohydrate supplement for milk modification in infant feeding.

FAULTLESS BRAND TOMATO JUICE

Distributor—The L. E. Elliott Brokerage Company, Salina, Kan.

Manufacturer—Marshall Canning Company, Marshalltown, Iowa

Description—Tomato juice seasoned with salt, retaining in high degree the natural mineral and vitamin values. The same as Faultless Brand Tomato Juice (THE JOURNAL, July 18, 1936, p. 213).

DODGE BRAND VEG-ALL

Distributor—Haas Brothers Company, San Francisco

Packer—The Larsen Company, Green Bay, Wis.

Description—Mixture of carrots, potatoes, celery, green beans, cabbage, peas, corn, lima beans, onions, sweet peppers, salt and water prepared by efficient methods for retention in high degree of the natural mineral and vitamin values, the same as the accepted Larsen's Veg-All for Soups, Salads, Vegetable Dishes (THE JOURNAL, Aug 12, 1933, p. 525).

DOWNING BRAND EVAPORATED MILK

Distributor—Downing Brothers Dairy, Rock Island, Ill.

Packer—Amboy Milk Products Company, Amboy, Ill.

Description—Canned, unsweetened evaporated milk, the same as Amboy and Melody Brands Unsweetened Evaporated Sterilized Milk (THE JOURNAL, May 7, 1932, p. 1655).

RED TURKEY BRAND HAWAIIAN PINEAPPLE TID-BITS

Distributor—J. B. Maltby Company, Corning, N. Y.

Packer—Hawaiian Pineapple Company, San Francisco

Description—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 14 1936

THE NOBEL PRIZE IN MEDICINE

The Nobel prize in medicine and physiology for 1936 has been awarded jointly to Sir Henry Dale of London, England, director of the National Institute for Medical Research at Hampstead, and Prof Otto Loewi of the University of Graz, Austria for their work on the transmission of the nerve impulse. Sir Henry Dale is 61 years of age. He was born in London and was educated in that city. From 1904 to 1914 he was director of the Wellcome Physiological Research Laboratories. He has been secretary of the Royal Society of Medicine since 1925 and a member of the General Medical Council since 1927. He came to the United States in 1919 and delivered the Herter Lectures at Johns Hopkins University, Baltimore, and again in 1933 to deliver the Charles Dohme Lectures, the subject being at the latter time 'Progress in Auto-pharmacology, A Survey of Present Knowledge of the Chemical Regulation of Certain Functions by Natural Constituents of the Tissues.' His Linacre Lecture on "Chemical Transmission of the Effects of Nerve Impulses" was published in the *British Medical Journal* May 12, 1934, his Dixon Memorial Lecture on "Pharmacology and Nerve Endings" was published in the *Proceedings of the Royal Society of Medicine* in January 1935. Among numerous other publications Sir Henry Dale and his associates published a paper entitled "Release of Acetylcholine at Voluntary Motor Nerve Endings," in the *Journal of Physiology* May 4, 1936.

Prof Otto Loewi is 63 years of age. He was born in Frankfort-on-the-Main, Germany, and graduated at Strasbourg in 1896. After working for a time at Frankfort under von Noorden, Dr Loewi entered the Pharmacologic Institute at Marburg in 1896. He went to Vienna as a professor in 1906 and since 1909 has been director of the Faculty of Pharmacology at the University of Graz. Among his numerous writings was a paper written in collaboration with E. Pichler, entitled "Glycogen Metabolism in Muscle and Its Nervous Control, Proprioceptive Glycogenetic Reflex," published in 1933. Dr Loewi came to New York in 1933 to deliver a Harvey Lecture on "The Humoral

Transmission of Nervous Impulses." He has published papers also on diuresis, the vegetative nervous system, diabetes, and other subjects.

In 1895 Alfred Nobel gave several millions of dollars to found the Nobel Commission, which he directed to award the interest each year among the five persons who in the preceding year had contributed the greatest work in medicine and physiology, in physics, in chemistry, in literature, and for the peace of the world. The final selection of the individual to receive the Nobel prize in medicine and physiology rests with the faculty of the Caroline Institute in Stockholm. The prize consists of a medal, a diploma and about \$40,000 in cash. The medical prize was awarded to persons living in the United States or Canada in 1912 (Carrel) in 1923 (Banting and Macleod) in 1930 (Landsteiner) and in 1934 (Minot, Murphy and Whipple).

BIG BABIES AND DIABETES

Repeatedly the observation has been noted in medical literature that diabetic mothers have large babies. Joslin has pointed out that fat babies born dead suggest examination of the parents for diabetes. Bowcock and McCord¹ have reported an instance of a mother giving birth to babies said to have weighed 12, 15½, 14 pounds, and 12 pounds 2½ ounces (5,443, 7,030, 6,350 and 5,514 Gm). In her sixth pregnancy, after normal gestation, she bore a baby weighing 12 pounds 2 ounces (5,500 Gm). In her seventh pregnancy she developed diabetes and, when labor was induced, gave birth to dead twins weighing a little over 3 pounds (1,360 Gm) each. By the use of insulin and diet she was made sugar free. When she next became pregnant she was kept sugar free without insulin, on a restricted diet and gave birth at term to a baby weighing 13 pounds 7½ ounces (6,109 Gm). All the babies were oversize in respect to height and weight.

In a record of large babies born in Great Britain, Dr W. F. Christie² indicates that infants heavier at birth than 10 pounds (4,535 Gm) may be postmature rather than obese and does not indicate any relationship to possible diabetes. The largest babies born, according to American medical records, include a case described by Dr D. P. Belcher³ of a woman who gave birth to a baby girl (stillborn) that weighed 25 pounds (11,340 Gm). There is also an authentic record of a baby born in Italy weighing 24½ pounds (11,294 Gm), and Birnbaum discusses the case of a child weighing 11,300 Gm at birth.

A most comprehensive recent consideration of the subject is that of Kaern⁴. Weight of the new-born above 6,000 Gm is apparently found once in 200,000.

¹ Bowcock, Harold and McCord, J. R. The Occurrence of Diabetes During Pregnancy in a Woman Bearing Large Babies. *J. A. M. A.* 94: 1917 (June 14) 1930.

² Christie, W. F. Prodigious Infants. *Brit. M. J.* 1: 373 (Feb. 23) 1935.

³ Belcher, D. P. A Child Weighing Twenty Five Pounds at Birth. *J. A. M. A.* 97: 950 (Sept. 23) 1916.

⁴ Kaern, T. On the Birth of Abnormally Big Children. *Acta obstet. gynec. Scandinav.* 16: 189-201 1916.

births, while weight exceeding 4,000 Gm is met in every thirty births. Surgical intervention usually becomes necessary when the child weighs more than 4,500 Gm. Kaern considers protracted pregnancy the chief factor responsible for increased fetal growth. The race, constitution and heredity of the parents, the age of the mother, the previous childbirths, and particularly pregnancy in diabetic women not treated with insulin are also important etiologically. In the delivery of large babies, the difficulties concerned with the shoulders are especially significant. The death rate among large babies is 14.9 per cent, in contrast to the average death rate of 3.2 per cent. Kaern is convinced that when there is a suspicion of giant birth it is not only justifiable but even indicated to induce delivery at a time when the fetus is deemed to have acquired normal birth weight. The suspicion of a giant child arises particularly in cases in which the woman has previously given birth to large children or the pregnancy lasts too long. Obviously, the presence of diabetes demands immediate control by restricted diet and insulin. The classic contribution on this subject by Randall and Rynearson,⁵ published recently in *THE JOURNAL*, merits most careful consideration by every physician interested in obstetrics, metabolism and the care of the child.

LIFE EXTENSION INSTITUTE ENJOINED FROM PRACTICING MEDICINE

The Life Extension Institute, a New York corporation, has been enjoined from practicing medicine in that state. Since its organization in 1914, this corporation has been engaged in promoting and conducting periodic medical examinations on a nation-wide scale. It has had contracts with large insurance companies for the annual examination of policyholders through local cooperating physicians paid by the corporation. It has made similar services available to individuals. While the medical examinations were made by local physicians, the reports were forwarded to the central office of the corporation and there reviewed by its medical staff. Suggestions with respect to needed medical treatment were outlined by the home office and transmitted to the examinees. Urinalyses four times each year constituted a part of the services rendered by the corporation to examinees. For making these physical examinations and for reporting to the examinees, the institute made a charge considerably in excess of the amount paid by it to local examining physicians. In 1935 the state instituted proceedings in the Supreme Court of New York, New York County, to dissolve the corporate status of the corporation and to revoke its charter on the ground that its activities constituted the practice of medicine, in which practice it could not lawfully engage. By consent of the parties, the Supreme Court appointed a referee to determine the issues.

After a number of hearings but before the state had finished presenting its evidence against the Life Extension Institute, the hearings were suspended because of negotiations between the Life Extension Institute and the state's attorney general to effect a settlement out of court. A stipulation was signed by the institute and by the attorney general in which the institute voluntarily assented to the entry of a decree against it, to embody the prohibitions and other provisions contained in the stipulation. The decree was thereafter entered enjoining the corporation from "practicing medicine and/or from holding itself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition and/or from offering or undertaking, by any means or method, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition." Furthermore, the decree specifically denies to the corporation the right to engage, directly or indirectly, in making physical examinations or reports and recommendations based on such examinations and from employing any physician to perform these activities for it. The corporation is permitted, under the decree, to maintain laboratories and to employ physicians to perform such services as may be legal and proper in connection with the operation of such laboratories. The corporation may, for compensation, supply "services" to physicians and others, when such services do not constitute the practice of medicine. It may not, however, receive any part of the compensation paid to physicians for the rendition of medical services. The corporation may not direct, supervise or control the medical services rendered by any physician who has been furnished any "services" by the corporation. The corporation may furnish to any physician who is interested in and specializes in life extension work "offices, laboratory facilities, work or services, financial assistance, clerical and other lay help, files, records, data, statistics and any other utilities or services not of a medical character." It is expressly stipulated, however, that the corporation may in no event receive from such physicians compensation constituting "an interest, direct or indirect, in fees to be paid said physician or group of physicians for professional services in the practice of medicine." In view of the stipulation and the decree that was based thereon, no judgment was rendered dissolving the corporation.

Under the decree, the Life Extension Institute may continue to exercise corporate powers but may not practice medicine, directly or indirectly, in any form. The referee, in the opinion that he filed along with the entry of the decree, emphasized the fact that a statute prohibiting the corporate practice of medicine serves a wholesome purpose, because the relation between a physician and his patient is and must be a personal and confidential one, which can exist only when the physician is a natural person.

⁵ Randall L. M. and Rynearson E. H. Delivery and Care of the New Born Infant of the Diabetic Mother. *J. A. M. A.* 107: 919 (Sept. 19) 1936.

Current Comment

MORTALITY FROM TUBERCULOSIS

The New York Tuberculosis and Health Association has recently summarized in an easily understandable form the deaths occurring from tuberculosis in the larger cities of the United States during the years 1934 and 1935. The total mortality of forty-six large American cities was 71.4 per hundred thousand in 1934 and 69.6 per hundred thousand in 1935. The third largest city in the group, Philadelphia, showed one of the largest declines, 12 per cent. The largest percentage decline was, however, that of Oklahoma City, which showed a 40 per cent reduction from 1934 to 1935 and gave in 1935 the lowest death rate for tuberculosis of any city in the list. The Negro tuberculosis mortality was given for forty-three cities during these years. In all instances the death rate among the Negroes was markedly higher than among the white population of the same cities. In many instances it was four or five times as large. The trend of mortality was also not as favorable among the Negroes as among the white population, though this might possibly be due to factors such as migration, which cannot be estimated from the gross figures given. Thus, the figures cited revealed a gross increase in deaths from tuberculosis among Negroes 0.4 per cent higher in 1935 than in 1934. As has been repeatedly pointed out, however, gross figures are difficult of analysis other than to show a general trend.

SULFHYDRYL IN DIBENZANTHRACENE CARCINOMA

A number of compounds containing the sulfhydryl group have been shown to increase the rate of cell division under certain conditions. Also it has been repeatedly demonstrated that a number of phenanthrene derivatives, including 1,2,5,6-dibenzanthracene, are carcinogenic when repeatedly applied to the skin of mice. Questions logically arise regarding the effect of applying the two substances sulfhydryl and dibenzanthracene simultaneously. One might expect that a synergistic effect would be produced and that there would be a greater percentage of tumor incidence in the treated animals and perhaps also that a shorter period would be required for the development of the growth. This possibility has been subjected recently to an experimental study.¹ Large numbers of white mice were treated daily, six days a week, for as long as twelve to fifteen months with either dibenzanthracene alone or with this substance and the sulfhydryl compound parathiocresol, applied either singly or in combination on alternate days or during alternate periods of several weeks each. The time of appearance of tumors was recorded and the growth was examined histologically. Contrary to what might be expected there was a decided decrease in the incidence of tumor formation and, in those animals in which a tumor did appear, there was an increase in the length of the period required for the development of the growth. A microscopic examination revealed rather characteristic

changes in the skin of the treated animals. The skin of the mice treated with parathiocresol alone was characterized by the presence of larger numbers of epithelial cells than normal skin and the various layers of the epiderm and the basement membrane were defined more clearly. There was little or no inflammatory reaction in the epiderm itself or in the underlying tissues. The skin of the animals treated with dibenzanthracene alone was also thickened and the layers were well defined but to a less extent than those in the skin to which parathiocresol had been applied. In contrast to the response to the sulfhydryl compound, however, inflammatory reactions were nearly always observed and keratinization of the skin was much more pronounced. Both types of histologic response were usually observed in the skin of the animals treated with the combinations of sulfhydryl and dibenzanthracene. According to the authors, the apparent anticarcinogenic effect of the sulfhydryl compound is not due to a simple, direct chemical "neutralization" of the two compounds but is exerted by way of the animal itself and specifically involves the skin.

THE TREATMENT OF MALARIA

The multiplicity of therapeutic agents now available for the treatment of malaria and the conflicting claims of efficacy made for them create much therapeutic confusion. To date the most authoritative consideration of the question is the report of the Malaria Commission published in the *Quarterly Bulletin* of the Health Organisations of the League of Nations.¹ The extensive review of the action and value of the various drugs embodied in this report is based on numerous laboratory and clinical observations. The status at the time of the report is summarized thus: "The new synthetic remedies now available are still in the experimental stage, and they [members of the commission] consider that the time has not yet come when any of these drugs can be recommended as substitutes for, or in preference to, quinine and other preparations of cinchona bark." The commission believed that quinine is effective for the purpose of clinical prophylaxis and that it remains the best drug to use. It is not good practice, according to the commission, to treat attacks of malaria in the acute stage with more than one of the specific drugs available. For treatment of an acute attack of benign tertian and quartan malaria, quinine and atabrine seem to be about equally effective. Atabrine, however, is definitely superior to quinine for the treatment of acute attacks of malignant tertian malaria. For the treatment of relapses the commission felt that no drug or combination of drugs seems yet to be available which will sterilize all the parasites in the human host and thus prevent the possibility of relapse. *Plasmochin*, unlike quinine and atabrine, has a powerful action against the gametocytes of malignant tertian malaria. The problem therefore retains some characters of confusion, much of which, however, can be eliminated by knowledge of the indications and limitations of the more widely used preparations.

1 Reimann, S. P. and Hall, Edith M. Protective Action of Sulfhydryl Against Carcinogenesis Induced with 1,2,5,6-Dibenzanthracene. *Arch. Path.* 22: 55 (July) 1936.

1 The Therapeutics of Malaria. Third General Report of the Malaria Commission. *Quart. Bull. Health Organ. of League of Nations* 2: 181 (June) 1933.

Association News

THE ATLANTIC CITY SESSION

Application Blanks Now Available for Space in the Scientific Exhibit

Application blanks for space in the Scientific Exhibit at the Atlantic City session are now available. The Committee on Scientific Exhibit requires that all applicants for space fill out the regular form. Applications close Feb 1, 1937.

Blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series the thirty-second dramatized cooperative broadcast under the title *Your Health* was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages who are members of the American Medical Association and of county and state medical societies stand ready, day and night to serve American people in sickness and in health."

The program will go out on the Blue network instead of the Red as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

November 17	Football Injuries	Morris Fishbein M.D.
November 24	Be Thankful	W. W. Bauer M.D.
December 1	Smog	W. W. Bauer M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News—Dr Charles LeBaron, Gulfport, Miss. was chosen president of the Gulf Coast Clinical Society at its meeting in Mobile, October 16. Other officers are Drs Herbert L. Brvans, Pensacola, Fla., and James H. Dodson, Mobile, vice presidents, and Mozart A. Lischkoff, Pensacola, secretary.

CALIFORNIA

Plague Infection in San Bernardino County—According to *Public Health Reports*, plague-infected fleas were found in San Bernardino County recently. Fleas collected from ground squirrels were inoculated into a guinea-pig and the animal showed typical plague infection on the fifth day. In 1933 a human case of plague was suspected to have originated in San Bernardino County and during the present year positive plague agglutination was found in the blood of another person after a mild illness that occurred while camping in this county.

Society News—Dr Maude E. S. Abbott, Montreal, Canada, addressed the San Francisco County Medical Society, November 10 on "Congenital Heart Disease."—Comdr Joel T. Boone, San Diego chief medical officer of the fleet marine force, U. S. Navy presented "Reflections of a White House Physician" before the Hollywood Academy of Medicine November 5.—At a joint meeting of the Los Angeles Society of Neurology and Psychiatry, the Southern California Society for Mental Hygiene and the California branch of the American Eugenic Society, November 9, a symposium on some medical

aspects of mental hygiene was presented by Drs Arthur R. Timme, Rupert B. Raney, Eugene Ziskind and Samuel D. Inghram. All are from Los Angeles.

Scope of Chiropractic Practice—According to a decision recently handed down by the superior court of California city and county of San Francisco in *McGranaghan v. Berger et al* chiropractors in California may not prescribe or administer drugs, use electrotherapy, hydrotherapy or other forms of physical therapy, may not practice surgery or obstetrics, may not treat the eye, ear, nose and throat and may not reduce fractures generally. The chiropractic initiative measure, said the court in authorizing chiropractors to practice chiropractic 'as taught in chiropractic schools and colleges' does not confer on chiropractors the right to employ any agency the use of which may be taught in chiropractic schools. The agency must constitute chiropractic and must not fall within the field of the practice of medicine and surgery. The measure in further permitting chiropractors to use all necessary mechanical and hygienic and sanitary measures incident to the care of the body 'permits chiropractors in the opinion of the court to use roentgen rays for diagnostic but not for therapeutic purposes.'

CONNECTICUT

Meeting of Alumni Association—Dr Arthur M. Yudkin, clinical professor of ophthalmology, Yale University School of Medicine, New Haven, was elected president of the Association of Yale Alumni at its recent annual meeting. He succeeded Dr George Blumer, David P. Smith, clinical professor of medicine at Yale. Other officers include Dr Clyde L. Deming, New Haven, chairman of the executive committee and Dr Philip Frank, Brooklyn, N. Y., chairman of the literary committee, succeeding the late Lafavette B. Mendel, Ph.D.

DISTRICT OF COLUMBIA

Request for Health Centers—A request of Dr George C. Ruhland, health officer of the District, for two new health centers was endorsed by the Medical Society of the District of Columbia at a meeting October 7. Dr Ruhland has asked for \$1,250,000 to construct five medical centers over a period of years, the first two to be started next year, newspapers reported.

Society News—The Medical Society of the District of Columbia was addressed, November 11, by Dr Edmund Horgan on 'New Technic for Thoracoplasty' and Mr J. E. Curtis, superintendent, 'Purification of the Water in the Washington Filtration Plant.' The society will be addressed November 18, by Drs George Louis Weller, Jr. on 'Bone Marrow Findings in the Diagnosis of Certain Blood Dyscrasias' and Robert E. Moran, 'Plastic Surgery Around the Orbit.'

Campaign Against Diphtheria—The department of health of the District launched a diphtheria immunization campaign October 5, to continue six weeks. It is aimed to reach pre-school and kindergarten children, clinics to be conducted in designated public schools. Public interest will be stimulated through the radio and press. The staff of the health department will be augmented on a temporary part time basis this increase in expenditures to be financed by social security funds.

GEORGIA

Georgia's Health—There were 34,313 deaths reported in Georgia in 1935, giving a death rate of 11.3 per thousand of population as compared with 11.8 in 1934. Deaths from automobile accidents showing a gradual increase since 1921, jumped from 774 deaths in 1934 to 903 deaths in 1935, giving respective rates, per hundred thousand of population, of 25.7 and 29.8. Heart disease accounted for 5,071 deaths in 1935 and a rate of 167.3, as compared with a total of 5,019 deaths and a rate of 166.9 in 1934. A decrease was noted for cancer, 1,715 deaths being registered in 1935 with a rate of 56.6 as compared with 1,762 deaths in 1934 and a rate of 58.6. The department of health reports that for many years smallpox was an important cause of death in Georgia. In the past five years however, there has not been more than one death annually attributed to this cause. In 1935 there were 365 deaths from pellagra giving a rate of 12, while in 1934 there were 351 a rate of 11.7. Malaria accounted for 387 deaths and a death rate of 12.8.

Society News—The Thomas County Medical Society was addressed at Thomasville recently by Drs Chapman Q. Dukes, Carrabelle, Fla., on treatment of pneumonia, and Simeon E. Sanchez, Barwick, cancer.—At a recent meeting of the Muscogee County Medical Society in Columbus, Dr Daniel C. Elkin, Atlanta, spoke on 'The Surgical Treatment of Tuber-

culosis," and Dr William C Warren Jr, Atlanta. The Intracranial Complications of Otitis and Mastoiditis"—A symposium on syphilis was presented before the Seventh District Medical Society at its meeting in Marietta, September 30.—Dr Thomas F Harper, Coleman, addressed the Randolph County Medical Society in Cuthbert, October 1, on pellagra.—The Ware County Medical Society at its meeting in Waycross, October 7, heard Dr Wilbur C Hafford discuss inguinal granuloma.—Among others, Dr Charles D Bowdoin, Atlanta, spoke on 'The Present Status of Malaria and Its Treatment' before the Eighth District Medical Society in Douglas, October 13.

ILLINOIS

Society News—Dr Eric Oldberg, Chicago, addressed the Sangamon County Medical Society, Springfield, November 5, on 'The Cerebrospinal Fluid'—Dr Willard Van Hazel, Chicago, addressed the Winnebago County Medical Society in Rockford, October 13 on 'Surgery of the Lungs and Pleura'—Drs John P O'Neil and Joseph A Jerger, both of Chicago discussed artificial fever therapy before the Kane County Medical Society in Elgin, October 14.

Chicago

Society News—Dr Charles Gordon Heyd, New York, President, American Medical Association, will address the Chicago Medical Society, November 18, on 'Liver Deaths' and the Complications of Gallbladder Surgery,' and Dr Ralph C Sullivan clinical professor of surgery, Loyola University School of Medicine 'The Operating Room Diagnosis of the Gallbladder'—Dr George W Crile, Cleveland, addressed the North Side Branch of the society, November 5, on 'Comparative Anatomy of the Energy Controlling System'—Among others, Drs Harry P Ritchie, St Paul, and Otto W Yoerg Minneapolis, discussed 'Another Suggestion in the Technic of Cholecystectomy for the Selected Case' and 'Fracture of Os Calcis' respectively before the Chicago Surgical Society, November 6—At a meeting of the Chicago Council of Medical Women, November 6 Dr Marie Ortmayer discussed 'Clinical Values of Gastrosocopy'—The Chicago Pathological Society was addressed, November 9, by Dr Paul R Cannon and George Hartley Jr on 'The Inadequacy of Allergic Inflammation as Protection Against Infection with Virulent Pneumococci'—Prof Bernhard Dattner of the University of Vienna addressed the German Medical Society of Chicago, November 3, his subject was 'Modern Therapy of Neurosyphilis'—Dr Dattner gave a lecture at Michael Reese Hospital, November 2, on 'Nervous Manifestations of Alimentary Hypersensitivity'—At a meeting of the Chicago Gynecological Society, November 20, papers will be presented by Drs William C Danforth, Evanston, Ill, on 'Carcinoma of the Cervix During Pregnancy', William B Serbin, Splenomegaly in Pregnancy' and Julius E Lackner and Leon Krohn, 'Effect of Ovarian Hormones on the Human (Nonpuerperal) Uterus'—The Chicago Orthopaedic Society was addressed, November 13 by Drs W Eugene Wolcott Des Moines, Iowa, on 'The Circulation of the Hip with Practical Suggestions Regarding Prognosis in Certain Types of Fractures of the Neck of the Femur' and Frank G Murphy, 'Osteochondritis Dissecans'.

INDIANA

The Service of Dr Wishard.—At the October meeting of the board of trustees of Indiana University, resolutions were passed in commemoration of the many years of service to the medical school of Dr William N Wishard, who recently retired as professor and chairman of the department of genito-urinary surgery. He had occupied this position since 1897 (THE JOURNAL, August 22, p 592).

Society News—Dr Frank C Walker will discuss "Bladder Symptoms Secondary to Cervical Lesions" before the Indianapolis Medical Society November 17 and Dr Dudley A Pfaff, 'Pancervical versus Supracervical Hysterectomy'. The society will be addressed, November 24 by Drs Edwin W Dyar Jr on 'Eye Problems in Childhood' and Francis C Smith 'Dermatology in Pediatrics'. Dr Harrison S Martland Newark, N J, spoke on the relation of medicine to crime November 10.—The Wayne-Union Counties Medical Society was addressed in Richmond October 22 by Dr George S Bond, Indianapolis on cardiology.—At a meeting of the Montgomery County Medical Society in Crawfordsville, October 22, Dr James F Balch Indianapolis discussed urology.—Dr Rollin H Moser, Indianapolis addressed the Henry County Medical Society in Newcastle October 15 on treatment of diseases of the stomach.—Dr John C Davis Logansport

discussed complications in the second and third stages of labor before the Cass County Medical Society, October 15.—At a meeting of the Fayette-Franklin County Medical Society in Connersville, October 13, Dr Clifford J Strahley, Cincinnati spoke on the treatment of heart disease.—Dr Jacob Meyer, Chicago, addressed the Tippecanoe County Medical Society in Lafayette October 13, on peptic ulcer.

IOWA

Rural Health Meetings—The extension service of the Iowa State College of Agriculture and the state department of health will hold health meetings in fifty three counties beginning the week of November 7, for residents in rural areas. The program will include a get-together meeting in each quarter of the county from Monday through Thursday. On Friday, and Saturday of the same week a county-wide conference of farm leaders will be held at the county seat, under the direction of the state department of health, to discuss what organized groups can do to improve and extend local health services.

Basic Science Certificate and Reciprocity—The basic science act of Iowa authorizes the board of examiners in the basic sciences, in its discretion, to issue a certificate without examination to an applicant who has passed an examination in anatomy, physiology, chemistry, pathology, bacteriology and hygiene, given by a board of examiners in the basic sciences or by a licensing board in another jurisdiction, provided the examination passed by the applicant was as comprehensive and exhaustive as the examination required under the Iowa act. On October 13, the Iowa board promulgated a regulation that hereafter no applicant will be exempt from examination unless he has successfully passed an examination in the subjects named given by a 'board of examiners in the basic sciences in another state with which reciprocity relations have been established.' This ruling apparently makes it impossible for a physician licensed in a jurisdiction in which the basic science requirement is not in effect to obtain reciprocity with Iowa without passing the Iowa basic science examination.

KANSAS

Society News—Dr Erastus S Edgerton discussed 'Malignancies of the Colon' before the Sedgwick County Medical Society, Wichita, November 17, and Dr Fred J McEwen conducted a cardiac clinic. Drs Wirt A Warren and Joseph S Reifsnider, Wichita, among others, addressed the society, November 3 on 'Treatment of Chronic Arthritis' and 'Safety Line in Acute Otitis Media'—The Pratt County Medical Society was addressed, October 23, by Dr Willard J Kiser, Wichita, on 'Carcinoma of the Breast'—At a meeting of the Butler-Greenwood County Medical Society, October 16, Dr George B Morrison, Wichita, spoke on 'Statistical Comparison and Practical Considerations of Transurethral Prostatic Resection'—Dr Chester H Warfield, Wichita, discussed 'Bone Tumors and Allied Bone Lesions' before the Sumner County Medical Society, October 22.—Dr Edgar A Pickens, Wichita, read a paper on 'Prostatic Resection' before the Meade-Seward County Medical Society, November 6.—Dr Lee V Hill, Kansas City, gave an anatomic demonstration on infections of the foot before the Wyandotte County Medical Society, November 3, and Dr Fred E. Angle, Kansas City, discussed coronary disease.

MARYLAND

Child Health Conferences—More than 2 800 children were examined during the fifteen weeks of the annual tour of the healthmobile of the state department of health. Nine counties in southern Maryland and the eastern shore were visited. Of the children examined 2,170 needed follow-up care, 1,224 had not been vaccinated, about 397 were underweight, 333 had unhealthy tonsils and eighty-one were 'mouth breathers.'

MASSACHUSETTS

New Society of Gastro-Enterology—The Boston Society for the Advancement of Gastroenterology was organized at a meeting in the Harvard Club September 24 to stimulate interest in the relation of gastro-enterology to the practice of general medicine and the various specialties and in the relation of other fields of medicine to gastro-enterology. Meetings will be held from October to May, and dues will be \$5. The society is a local chapter of the National Society for the Advancement of Gastroenterology. Officers are Drs Charles W McClure president, William R Morrisson vice president,

and Lester R. Whitaker, secretary-treasurer. The affairs of the society will be administered by an executive committee consisting of two elected members and the officers ex officio. The elected members are Drs. Henry Baker and Louis F. Curran. A clinical meeting was held at the Boston City Hospital, November 10.

"Eye Specialist" Bernstein Pleads Guilty—Samuel Bernstein, New Orleans, pleaded guilty in Middlesex Superior Court, East Cambridge, October 14, to a charge of conspiracy and larceny of \$500. In the meantime, he has been turned over to other authorities in Massachusetts who wanted him for the same type of fraud. Bernstein was said to be one of three men traveling about the country representing themselves as "eye specialists." In this instance his companions were said to be Ernest Mandell and Jack Shaw. The general procedure of "eye specialists" has been described at various times in THE JOURNAL. "Liquid radium" is dropped into the eye, the substance congeals and is then removed with the claim that it is a cataract. Bernstein was identified through a police picture and returned voluntarily after he was located in New Orleans, not, however, until he was threatened with extradition. A man involved in a similar swindle in 1934 gave the name S. Bernstein (THE JOURNAL, March 17, 1934, p. 849). He and another man giving the name E. I. Mandell or Mendell were arrested but were released for want of proof on condition they would return the \$300 involved.

Society News—Dr. Israel M. Rabinowitch, Montreal, Canada, addressed the Greater Boston Medical Society, November 10, on "Effects of Protamine-Zinc-Insulin and Other Mixtures of Zinc and Insulin in Diabetes Mellitus."—The health developments in Massachusetts under the social security program was the theme of the Massachusetts Conference of Social Work, November 7, in Boston, speakers were Drs. Henry D. Chadwick, state health commissioner, Mary Louise Dietz, director, division of child hygiene of the state department of public welfare, and Edward G. Huber, assistant director, division of administration.—Among speakers before the New England Heart Association in Boston, November 9, were Drs. Ashton Graybiel on "The Effect of Inhalation of Tobacco Smoke on the Electrocardiogram," and Paul D. White, "The Growing Importance of Cardiac Neurosis."—Dr. Thomas B. Quigley, Boston, discussed "State Medicine in Sweden" at a meeting of the Essex South District Medical Society, November 4.—Samuel Eliot Morison, Litt D, professor of history, Harvard University, presented high lights in Harvard medical history before the Harvard Medical Society, November 10.

MICHIGAN

Dr. Byington Accepts New Position—Dr. Garner M. Byington, Battle Creek, for four years medical director of the W. K. Kellogg Foundation, has resigned to become director of medical relations in the Detroit Department of Health, newspapers report. In his new position Dr. Byington will carry out a child health program in Detroit similar to that sponsored by the foundation in rural districts. Dr. Byington is a graduate of Wayne University College of Medicine, Detroit.

Changes in Faculty at Wayne University—Dr. Charles G. Johnston, Harriet M. Frazier fellow in research surgery, and instructor in surgery, University of Pennsylvania School of Medicine, Philadelphia, has been appointed professor and head of the department of surgery at Wayne University College of Medicine, according to an announcement. Dr. Warren O. Nelson, formerly research assistant in anatomy, Yale University School of Medicine, New Haven, Conn., has been named professor and head of the department of anatomy. Dr. Gordon B. Myers has been appointed professor and acting head of the department of medicine. Dr. Ward F. Seeley, professor of obstetrics and gynecology, has been made also acting head of the department, and Dr. Thomas B. Cooley has been named professor and head of the department of pediatrics. Dr. Seeley succeeds Dr. H. Wellington Yates, who becomes professor emeritus. The appointment of Dr. Hugo A. Freund as professor of clinical medicine was also announced.

MINNESOTA

One Year at Hard Labor—Mels White, alias Mike Roller, alias Marion Roller, alias Marion Royle, pleaded guilty to a charge of practicing healing without a basic science certificate, October 8 at Rochester, and was sentenced by Judge Vernon Gates to one year at hard labor in the Olmsted County Jail. White, who claims to be a full blooded Osage Indian from Oklahoma, has spent most of the past ten years in the state prison on various charges.

Health at Minneapolis—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended October 31, indicate that the highest mortality rate (193) appears for Minneapolis and that the rate for the group of cities as a whole was 111. For the corresponding period last year the mortality rate for Minneapolis was 89 and for the group of cities, 109. The annual rate for eighty-six cities for the forty-four weeks of 1936 was 121 as against a rate of 113 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, for they fluctuate widely.

MISSOURI

Society News—The St. Louis Medical Society was addressed, October 27, by Drs. Lex G. McCutchen on "Comparative Values of Radium and Contact X-Ray Therapy in the Treatment of New Growths," Thomas P. Findley, Jr. on "Observations on the Mechanism of Urine Formation," and John W. Thompson, "Results in the Surgical Treatment of Carcinoma of the Gastro-Intestinal Tract."—The Boone County Medical Society was addressed in Columbia, October 6, by Drs. William T. Coughlin and James L. Mudd, St. Louis, on "Malignancies That Involve the Mouth and Jaws" and "Chronic Lung Suppuration" respectively.—Dr. Gervais D. Smith, Bolivar, among others, addressed the Dallas-Hickory-Polk County Medical Society, October 6, on "Recognition and Treatment of Menopausal Disturbances."—Dr. George Kirby Sims, Bolivar, read a paper entitled "Forceps: Their Uses, Abuses, Indications and Contraindications" before the Jasper County Medical Society, October 27.—Common Diseases of the Skin and Their Treatment" was discussed before the Perry County Medical Society, October 1, by Dr. Norman Tobias, St. Louis.

NEBRASKA

New Division of Maternal Health—Dr. John Warren Bell, Olean, N. Y., has been appointed director of a new division of maternal and child health in the state department of health set up under the social security plan. The committee on maternal health of the Nebraska State Medical Association met with Dr. Bell, September 18, to establish a basis of coordination with the new division. Basic material now being gathered and analyzed on a regional basis will be presented to the committee and to the councilor districts.

District Meetings—The Seventh Councilor District Medical Society held its annual meeting at Friend, October 22. The speakers were the following physicians of Lincoln: Drs. Charles H. Arnold, "Management of Complicating Factors in Hyperthyroidism," Harry E. Flansburg, "Atypical Hyperthyroidism," Floyd L. Rogers, "Diagnosis and Treatment of Hyperthyroidism," and Sidney O. Reese Jr., "Clinical Problems Associated with Malignancy of Thyroid," and Drs. Albert F. Tyler and Francis L. Simonds, Omaha, "Treatment of Malignancies," a film in color.—The Ninth and Tenth Councilor District Medical Societies held a joint meeting at Kearney, October 15. The speakers were Drs. Charles R. Spicer, Hastings, on "Insulin in Infant Feeding," Abram E. Bennett, Omaha, "Results Obtained in Neuropsychiatric Disorders with Artificial Fever," Lee W. Rork, Hastings, "Observations in Early Pulmonary Tuberculosis," and Albert F. Tyler, Omaha, "Treatment of Accessible Malignancies of the Head, Face and Neck."

NEW JERSEY

State Tuberculosis Meeting—The thirtieth annual meeting of the New Jersey Tuberculosis League was held in Newark, October 22-23. Among the speakers was Dr. James Alexander Miller, New York, on "Vignettes from Tuberculosis History." Dr. Charles I. Silk, Perth Amboy, was elected president of the league.

Society News—Dr. George W. Crile, Cleveland, addressed the New Jersey Gastro-Enterological Society, October 5, on "Pathologic Physiology of the Sympathetic System with Special Relation to Peptic Ulcer and Spastic Colitis."—Dr. Sigmond S. Greenbaum, Philadelphia, addressed the Newark Dental Club, October 1, on "Oral Medicine with Special Reference to Diagnosis."—Dr. John A. O'Regan, New York, addressed the Bergen County Medical Society, October 13, on obstetrics. A round table discussion of maternal welfare in New Jersey was presented by Drs. Spencer T. Snedecor, Hackensack, William K. Pudney, Montclair, Henry d'Agostin, Cliffside Park, and Lyman Burnham Englewood.

NEW YORK

Graduate Lectures—A graduate course of lectures was presented in Wayne and Cayuga counties beginning September 24 and continuing on Thursdays through October. Dr Russell L. Cecil, New York, gave the first, speaking on pneumonia, subsequent speakers, all of New York, were Drs Ralph G. Stillman, on "Significance of Laboratory Tests and Methods", Edward M. Livingston, "General Aspects of Abdominal Surgical Diagnosis", William Goldring, "Physiology of Kidney Diseases," and Robert T. Frank, "Practical Endocrinology."

New York City

Second Harvey Lecture—Dr Eugene M. Landis, Philadelphia, will give the second Harvey Society Lecture of the season at the New York Academy of Medicine, November 19, on "The Passage of Fluid Through the Capillary Wall."

Brickner Lecture—Dr George R. Minot, professor of medicine, Harvard University Medical School, Boston, will deliver the sixth Walter M. Brickner Lecture at the Hospital for Joint Diseases, November 19, on "Anemia: Etiology, Diagnosis and Treatment."

Personal—The advisory council of the department of hospitals is sponsoring a dinner in honor of Dr Mark L. Fleming, who recently retired as general medical superintendent of the department. The dinner will be at the Waldorf-Astoria, Wednesday evening, November 18.

Diabetes Meeting—Insulin protamine was the subject of discussion at a clinical meeting of the New York Diabetes Association, November 13, at the New York Academy of Medicine. The speakers were Drs Henry Rawle Geyelin and Herman O. Mosenthal, New York, and Howard F. Root, Boston.

Public Health Training for Medical Students—Students at Long Island College of Medicine are to be trained in public health administration in cooperation with the Red Hook-Gowanus health center now under construction by the department of health, it was announced October 1. The plan calls for student participation in the actual work of the health center, with lectures, laboratory practice and field trips. It is expected that the center will be completed about May 1937.

Sentenced for Insurance Fraud—Dr Rubin Klein, 92 Humboldt Street, Brooklyn, was sentenced to two months in city prison, October 19, on a plea of guilty to conspiracy in a fraudulent accident insurance claim, the New York Times reported October 20. It was said that Klein signed a report to an insurance company that he attended a man for injuries received in an automobile accident when the injuries had actually occurred previously and the man had already received an award of \$2,000 from another company. According to the newspaper report, the man admitted the conspiracy but denied receiving the money. This case was one of several revealed by an investigation of accident frauds perpetrated on insurance companies by a so-called "Hurwitz gang," of which one Jacob Hurwitz, an insurance broker, was said to be the leader. The case was prosecuted by Assistant District Attorney Bernard Botein, in charge of a new accident fraud bureau.

OHIO

Personal—Dr Abram L. Van Horn, chief of the bureau of child hygiene of the state department of health since 1934, has been appointed a regional consultant for the Children's Bureau, U. S. Department of Labor effective November 15. Dr Van Horn will supervise the maternal and child health program of the bureau in Maryland, Delaware, District of Columbia, Virginia, North and South Carolina, Georgia and Florida.

District Meeting—The fall meeting of the Eighth Council District, Ohio State Medical Association, was held in Athens November 12. The speakers were Drs Clyde L. Cummey, Cleveland, on "Syphilis the Great Masquerader," Louis J. Karnosh, Cleveland, "Psychoses Associated with Disturbances of the Endocrine System," and Leslie L. Bigelow, Columbus, "High Lights in Medicine." The motion picture "Treatment of Breech Presentation," produced by Dr Joseph B. De Lee, Chicago was shown.

Society News—Dr Emil Novak, Baltimore, will address the Academy of Medicine of Cleveland November 20 on "Endocrinology and Organotherapy in Gynecology."—At a meeting of the Wayne County Medical Society in Wooster, October 23 the speakers were three Orrville physicians: Drs Otto P. Ulrich on "Care of Accident Cases," Orrin C. McDowell "Treatment of Hemorrhoids" and George H. Irvin

"Obstetric Anesthesia"—Dr Harry G. Armstrong, U. S. Army, Wright Field, Dayton, addressed the Montgomery County Medical Society, Dayton, November 20, on "Physiologic Effects of Flying."—Dr Soma Weiss, Boston, addressed the Academy of Medicine of Cincinnati and the Heart Council of Greater Cincinnati at a joint meeting November 10, on "The Relation of the Cardiovascular System to the Nervous System." Dr Isidor C. Rubin, New York, will address the academy November 17 on "Tubal Insufflation and Sterility: Diagnostic and Therapeutic Aspects."—Dr James G. Carr, Chicago, addressed the Stark County Medical Society, Canton, November 12, on diseases of the heart. Drs Howard A. Power, Charles E. Ziegler and David B. Martinez, all of Pittsburgh presented a symposium on obstetrics before the society October 15.

OREGON

Annual Registration Due December 1—All practitioners of medicine and surgery holding licenses to practice in Oregon are required by law to register annually on or before December 1 with the secretary of the Board of Medical Examiners and at that time to pay a fee of \$5. A practitioner failing to register is subject to a penalty of \$1 for each thirty days or part thereof of default, and his failure to reregister within ninety days after December 1 is a misdemeanor.

PENNSYLVANIA

Society News—At a meeting of the Fayette County Medical Society in Uniontown, November 5 the speakers were Drs James K. Everhart, Pittsburgh, William W. Briant Jr., Mount Lebanon, and Ellsmer L. Piper, Pittsburgh. This was the second pediatric institute of the series of three being presented throughout the state under the auspices of the state department of health and the Medical Society of the State of Pennsylvania.—Drs Louis H. Clerf and Charles E. G. Shan non, Philadelphia, addressed the Western Pennsylvania Eye, Ear, Nose and Throat Society, Indiana, October 15, on "Differential Diagnosis of Diseases of the Larynx and Practical Points in Their Treatment" and "The Relationship Between Paranasal Disease and Retrobulbar Neuritis" respectively.

Philadelphia

Illegal Practitioner Jailed—The state board of medical education and licensure recently investigated the "Medical Research Laboratories" Thirteenth and Market streets. One Adolph Quesada pleaded guilty to practicing medicine without a license, received a suspended sentence and was fined \$100 and costs. Being unable to pay the fine and costs, he was placed in jail.

Personal—Dr George M. Dorrance, professor of maxillo-facial surgery, Thomas Evans Institute, University of Pennsylvania and surgeon at the American Oncologic Hospital received the medal of achievement awarded by the Poor Richard Club, an advertising club, of Philadelphia, October 6.—Dr Brooke M. Anspach received the honorary degree of doctor of science at the Founders' Day exercises at Lafayette College, Easton, October 16.

In Memory of Dr Anders—The Philadelphia County Medical Society will devote its meeting of November 25 to the observance of the annual Pennsylvania Health Day and a memorial to Dr James M. Anders, who was a leader in the movement to establish the public health day. Dr Roderick Heffron, Boston, will speak on "The Control of Pneumonia" and Dr George E. Pfahler will pay tribute to Dr Anders. Dr Baldwin L. Keyes will present the report of the society's noise abatement committee, whose work was almost the last activity sponsored by Dr Anders before his death August 29.

Annual Dinner of Ex-Residents—The Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will hold its fiftieth annual meeting and dinner December 1. Clinics will be given in the auditorium of the hospital in the afternoon by Drs Edward A. Schumann, Emily P. Bacon, Ross V. Patterson and Russell S. Boles. The dinner will be at the Art Club with Major Gen. Charles R. Reynolds, surgeon general of the U. S. Army, presiding. General Reynolds is president of the association. Guests will be Dr George E. Pfahler, Hon. S. Davis Wilson, mayor of Philadelphia, Dr William C. Hunsicker, director of public health of the city, Dr William G. Turnbull, superintendent of the Philadelphia General Hospital and Dr John G. Meharg, president of the Blockley Medical Society. Ex-residents who have not received announcements are asked to send their names to Dr George Wilson, secretary of the association, 133 South Thirty-Sixth Street.

SOUTH CAROLINA

Personal—Dr Oscar D Garvin Jr, Ridge Springs has been appointed health director of the district including the counties McCormick, Edgefield and Saluda—Dr James A Stumbo, Charleston has been appointed health officer of a new health unit in Union County

The Founders Day Lecture—Dr Reginald Fitz, professor of medicine, Boston University School of Medicine Boston delivered the Founders Day Lecture at the annual observance of the day at the Medical College of the State of South Carolina November 5 Clinics were conducted at Roper Hospital in the morning by Drs Roger G Doughty, Columbia George R Wilkinson, Greenville, Joseph I Waring Archibald J Binst, William A Smith and F Adelbert Hoshall Charleston In the afternoon Dr Fitz conducted a medical clinic

SOUTH DAKOTA

Personal—Dr Norris T Owen, Rapid City, was recently named president of the South Dakota State Board of Health Dr Carl A Feige, Canova, is vice president and Dr Burt A Dvar, De Smet, director of medical licensure Dr Park B Jenkins is secretary

VIRGINIA

Portrait of Dr Horsley—The Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, at its annual meeting October 6 presented to the hospital a portrait of Dr John Shelton Horsley Dr Roy W Upchurch, Danville, president of the association, made the presentation address, and the portrait was unveiled by John Shelton Horsley III It was accepted by Dr William H Higgins, Richmond Drs John M T Finney, Baltimore, and Stuart McGuire, Richmond were guest speakers at the ceremony Dr Horsley and his staff conducted clinics at the hospital in the morning

Specialty Society Elections—Dr Roger H DuBose, Roanoke, was elected president of the Virginia Pediatric Society at its annual meeting during the convention of the Medical Society of Virginia in Staunton in October Dr W Ambrose McGee, Richmond, was reelected secretary Dr Austin I Dodson, Richmond, was elected president and Dr Linwood D Keyser, Roanoke, secretary of the Virginia Urological Association, which met at the same time The Virginia Orthopedic Society elected Drs John Blair Fitts, Richmond, and Bernard H Kyle, Lynchburg, president and secretary respectively At the meeting of the Virginia Society of Obstetricians and Gynecologists Dr Marvin Pierce Rucker, Richmond was elected president and Dr Eugene S Groseclose, Lynchburg, secretary

WEST VIRGINIA

Dr Schwinn Honored—A bronze bust of Dr Jacob Schwinn was recently unveiled at the Ohio Valley General Hospital, Wheeling, as a tribute from the Jacob Schwinn Study Club Dr Schwinn, a native of Switzerland, came to the United States at the age of 25, and has practiced more than fifty years in Wheeling He has for many years been a member of the staff of the Ohio Valley General Hospital and has served as president of the Ohio County Medical Society and the West Virginia State Medical Association He is 81 years old.

Society News—Dr Albert H Hoge Bluefield, addressed the Fayette County Medical Society at Oak Hill, October 6, on "Gastro Intestinal Allergy" The Kanawha and Raleigh county medical societies were guests—Dr Leopold Clarence Cohn Baltimore, addressed a joint meeting of the Harrison, Marion and Monongalia county medical societies in Clarksburg, October 1, on diagnosis and treatment of cancer—Drs Abraham Seletz and Howard A. Swart Charleston, addressed the Kanawha Medical Society October 13, on "Relationship of Nasal Accessory Sinus Infections to Certain Obscure Chest Involvements" and "Internal Derangements of the Knee Joints" respectively—Dr Isaac A Bigger, Richmond Va addressed the Ohio County Medical Society, Wheeling, October 9 on "Surgery of the Heart and Pericardium"

WISCONSIN

Personal—Dr William E Grove, associate clinical professor of laryngology rhinology and otology, Marquette University School of Medicine, Milwaukee, has been appointed to succeed Dr Charles J Coffey, clinical professor and director of the division of laryngology, rhinology and otology, who has retired after thirty-six years of teaching at Marquette to devote his time to private practice. Dr Coffey was honored at a

testimonial dinner at the Hotel Schroeder, October 22 Dr Francis D Murphy, head of the department of medicine at Marquette, was chairman and speakers were the Rev William M Magee, president of the university, Rev Anthony Berens, regent and Dr Eben J Carey, dean—Dr Ralph M Waters Madison addressed the section of anesthetics of the Royal Society of Medicine of London, October 2, on carbon dioxide absorption from anesthetic atmospheres

GENERAL

Campaign Against Cancer—The national enlistment campaign of the Women's Field Army in the cancer control movement will be held March 21-27, 1937, the fee to be \$1 In the distribution of funds, 70 per cent will be given to the states for their activities, 20 per cent to the central office in New York City for expenses and 10 per cent to a contingent fund All funds will be allocated from the central office

Medical Section of Accident Boards—At the recent annual meeting of the International Association of Industrial Accident Boards and Commissions in Topeka Kan, a resolution was adopted by the medical section urging the continuance of separate medical programs in subsequent years The resolution has been accepted by the association's executive committee The 1936 session of the association was the first in which a medical section convened

Rocky Mountain Medical Conference—The first Rocky Mountain Medical Conference will be held in Denver, July 19-21 1937 The conference is to be a joint meeting of the Colorado State Medical Society, the New Mexico State Medical Society, the Utah State Medical Association and the Wyoming State Medical Society and will be open to members of the recognized societies of adjoining states According to the present plan, the conference will be held every three years with a different state acting as host.

Railway Associations Elect Officers—Dr William J Connelly, Carnegie, Pa, was elected president of the Association of Surgeons of the Pennsylvania Railroad at its convention in Philadelphia in October Dr Frank P McCarthy, Erie, Pa, was made vice president—Dr Wade H St Clair, Bluefield, W Va, was elected president of the Association of Physicians and Surgeons of the Norfolk and Western Railway, at the annual meeting in New York, October 7-8

Plans for Congress on Gastro-Enterology—The United States National Committee of the International Society of Gastroenterology has been formed by representatives of the various gastro-enterologic organizations in this country, it is announced Those who are interested in joining are invited to apply to the president, Dr Anthony Bassler, 121 East Seventy-First Street, New York The second International Congress on Gastroenterology will be held in Paris, Sept 13-15, 1937

Changes in Status of Licensure—The Pennsylvania State Board of Medical Education and Licensure recently reported the following actions dated August 28

Dr Eugene Hamborszky Millersville license restored It was revoked Oct 18 1934

Dr David A Rupert Donora license suspended because of conviction of narcotic addiction

The New Jersey State Board of Medical Examiners has reported the following

Dr Francesco Verdighione Camden license revoked automatically through his failure to present evidence of having become a citizen of the United States within six years after declaring his intention to do so

Dr John J Kashevich Newark license restored it was revoked in 1923

Meeting of Radiologists—The twenty-second annual meeting of the Radiological Society of North America will be held at the Hotel Netherland Plaza, Cincinnati, November 30-December 4 The preliminary program lists the following speakers, among others

Drs Henry Snure and George D Maner Los Angeles Roentgen Ray Evidence of Metastatic Malignancy in Bone

Dr Hugh F Hare Boston Cancer of the Thyroid in Children

Drs Wendell G Scott and Sherwood Moore St Louis Roentgen

Kymographic Studies in Clinical Cardiac Conditions

Dr Louis H Clerf Philadelphia Carcinoma of the Bronchus

Drs Richard Manges Smith and Austin T Smith Philadelphia Osteopetrosis

Dr Carleton B Peirce Ann Arbor, Mich Pulmonary Pneumocoele

Certain Considerations in Cystic Disease of the Lung

Drs Eugene T Leddy and Walter C Popp Rochester Minn Use of

Pentobarbital Sodium (Nembutal) for Roentgen Sickness Report

of 175 Cases

Several symposiums have been planned diseases of the stomach and gallbladder, the female pelvis therapy, gastroscopy, the chest and physics Clinics will be held every afternoon except Thursday

Society of Tropical Medicine—The American Society of Tropical Medicine will hold its annual convention at the Fifth Regiment Armory, Baltimore, November 18-20. The presidential address will be delivered by Dr. Henry E. Meleney, Nashville, on "The Problem of Malaria Mortality in the United States," and the first Charles Franklin Craig Lecture on Tropical Medicine will be presented by Dr. Ernest Muir, general and medical secretary, British Empire Leprosy Relief Association, London, England, on "The Control of Leprosy." The speakers on the program will include:

Dr. Wilbur A. Sawyer, Director International Health Board Rockefeller Foundation, A History of the Activities of the Rockefeller Foundation in the Investigation and Control of Yellow Fever
 Carl M. Johnson, Sc D, Panama and Raymond A. Kelsler, Ph D, Ancon, C. Z., Incidence of Chagas Disease in Panama as Determined by the Complement Fixation Test
 Dr. Ellis H. Hudson, Deir ez Zor, Syria, The Significance of Bejel.
 Dr. Thomas B. Turner, International Health Board, New York, Studies on the Relationship Between Yaws and Syphilis

At the luncheon of the society, November 19, Walter Reed medals will be presented to Mrs. Walter Reed and to the Rockefeller Foundation, the latter for meritorious achievement in the study and control of yellow fever.

Society News—Dr. Elliott P. Joslin, Boston, was chosen president of the Interstate Post-Graduate Medical Association at the annual meeting in St. Paul, October 12-16.—Dr. Paul Titus, Pittsburgh, was chosen president-elect of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons at the annual meeting in Bretton Woods, N. H., September 14-16, and Dr. James W. Kennedy, Philadelphia, was installed as president. Dr. Willard R. Cooke, Galveston, Texas, was elected vice president and Dr. James R. Bloss, Huntington, W. Va., reelected secretary. The 1937 meeting will be at The Homestead, Hot Springs, Va.—Dr. Arthur T. McCormack, Louisville, Ky., was chosen president-elect of the American Public Health Association at the annual meeting in New Orleans in October and Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, Washington, D. C., was installed as president. Vice presidents elected were Drs. Angel de La Garza Brito, Mexico City, and Robert E. Wodehouse, Ottawa, Canada.—Drs. Andrew L. Glaze, Birmingham, Ala., and Herbert S. Alden, Atlanta, Ga., were elected president and secretary respectively of the Southeastern Dermatological Association at its meeting in Atlanta, September 6.—Dr. Byrl K. Kirklm, Rochester, Minn., was chosen president-elect of the American Roentgen Ray Society at the annual meeting in Cleveland and Dr. Charles A. Waters, Baltimore, was installed as president. Dr. Eugene P. Pendergrass, Philadelphia, was reelected secretary. The 1937 session will be held in Chicago, September 13-17.

FOREIGN

Society News—Dr. Henry G. Bugbee, New York, was elected president of the International Urological Association at its recent meeting in Vienna. The next meeting will be in New York in 1939.—The International Congress of Ophthalmology will be held in Cairo, Egypt, Dec. 8-14, 1937. The official subjects for discussion will be "Arterial Hypertension of the Retina" and "Endocrinology and the Eye." Correspondence should be addressed to the secretary general, Dr. M. Tewfic, Postoffice Box 2001, Cairo.

The Jerusalem Medical Center—Ground was broken on Mount Scopus, overlooking the city of Jerusalem, October 20, for a medical center to be erected under the auspices of Hadassah, the women's Zionist organization of America, and the Hebrew University in Jerusalem (THE JOURNAL, May 16, p. 1744). Funds for the medical center, which is to consist of a hospital, a graduate medical school and a school for nurses, have been raised principally by Hadassah and the American Jewish Physicians Committee.

Government Services

Centennial Celebration of Army Library

The one hundredth anniversary of the founding of the Army Medical Library will be observed with ceremonies at the library, November 16. The principal address will be delivered by Sir Humphry D. Rolleston, Haslemere, Surrey, England, formerly regius professor of physic at the University of Cambridge, former president of the Royal Society of Medicine and the Royal College of Physicians and physician extraordinary to the king. Other speakers will include Col. Harold W. Jones, librarian, and Surg. Gen. Charles R. Reynolds. Visitors will inspect the library; its operation will be described by the staff, and rare books and manuscripts will be on display.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 3, 1936

The Decline of Population

The fall of the birth rate is a phenomenon, in varying degree, of all western Europe and North America. It is at last beginning to receive some attention in this country. Statisticians such as Professor Carr-Saunders, D. V. Glass and R. Kuczynski, have written on the subject. In a lengthy editorial the *Times* points out that between 1821 and 1921 the population of England and Wales was trebled, and that from 26 million in 1850 the white population of North America rose to 137 million in 1933. Now everywhere, in the new countries as well as the old, the trend is turning. The great increase of the British population during the last century was due chiefly to a fall in the death rate, not to a rise in the birth rate. The persistent decline in that death rate is still concealing the imminent decline of population. In England and Wales the mean expectation of life in the middle of the last century was about 39 years, now it is 59 years. At the most fertile period, between 1851 and 1860, the natural increase of our population was 151 per cent a year; now it is 3 or 4 per cent. It has been proved statistically that our present birth rate is not sufficient to maintain the population. Professor Carr-Saunders in his recent book "World Population" has warned us that there is evidence that the numbers of the British race will certainly fall, perhaps catastrophically, during the next fifty years.

Kuczynski has introduced a new and most important unit for the study of population, called "the net reproduction rate." This may be defined as the average number of females that will be born to each new-born girl according to fertility and death rates of the women living in a particular year. If this rate is unity, the female population is being exactly replaced and the population will remain stationary. If the rate is above unity, the population will increase; if below it, the population will decrease. In only three countries of Europe—Bulgaria, Russia and Italy—is the rate above unity. In England and Wales the rate (1933) was 0.734, in France 0.82, in Germany (1930) 0.70, in Italy 1.18.

Estimates have been made of future populations. Assuming that the British birth rate declines at the same rate as during the period 1924-1931 and that mortality continues to fall, Dr. Leybourn calculates that our population forty years hence will be 32,700,000, a decline of 12,000,000. Another estimate, with different assumptions, puts our future population at 38,500,000 in 1975 and 20,000,000 a hundred years hence. For other countries similar estimates have been made. France has been given 29,000,000 for 1980, Germany 50,000,000 for 1975 (this estimate was made in 1930). There may be differences as to the exact figures, but there is none as to the tendency they reveal. Some qualification must be made as to what are called "the totalistic countries," which might be defined as those which have totally abolished the liberty of the individual. For military reasons, in spite of their poverty, Russia, Germany and Italy are all endeavoring to increase population by monetary inducements. In Germany the birth rate fell from 39 per thousand in 1876 to 15 in 1932 and the net reproduction rate to 0.75, which is about the same as in England. Statisticians prophesied a decline of population of over 20,000,000 by the year 2000 and all agreed that after 1960 a decline would begin. Alarmed at this prospect, the government passed an act in 1933 to provide loans for young couples wishing to marry, a fourth of which would be canceled on the birth of each child. It is too soon to judge of the success of this scheme or of a similar one in

Italy. But marriages have increased in Germany from 509,591 in 1932 to 701,431 in 1934, births in the same period by 181,772. However, there was also an increase in classes not benefiting by these grants and therefore how far the increase is due to economic recovery remains a question. The government also took drastic measures to check the practice of abortion. In his book "The Struggle for Population" Mr V. D. Glass calculates that if the rise of the German birth rate is maintained the present population will be replaced but with a smaller proportion of potentially fertile women. Thus decline has been postponed, not averted. In Italy Mr Glass can find no "significant positive result of the attempt to encourage marriage." Although the birth rate has hardly responded to official encouragement, infant mortality has shown a remarkable decline. The two dictatorships, with all their resources of power and propaganda, have not been able to destroy the menace of depopulation. In France and Belgium propaganda and family allowances have been tried. But an inquiry made for the Eugenics Society (of England) revealed little to show any result. In neither of these countries has there been such a sharp decline in the birth rate as in England, where it has fallen from 22 to less than 14 per thousand in twelve years. It is reckoned that a man needs an addition of 120 per cent to his income to maintain an infant and four children. The highest allowances on the continent cover little more than half the cost of raising three children.

What causes have brought about the position in England where the birth rate is now only two thirds of that necessary for replacement and in the professional classes only one half? The *Times* suggests that modern housing, modern ways of spending leisure, social and educational ambitions for children, the concentration of population in towns, educational and economic opportunities opened to women, and the tendency to put the comfort and independence of the individual before the interests of the community play their part and have more to do with the decline than economic considerations. But it might be objected that some of these causes are of an economic nature. The *Times* adds that most influential of all in the opinion of many authorities is the widespread knowledge of contraceptive measures. It asks: Can we hope to hold a large proportion of the thinly populated parts of the earth when our stock is dwindling? It does not suggest a remedy but says that the first step toward action is an easy one: publicity for the problem and full and authoritative investigation.

Atmospheric Pollution by Smoke

An interesting smoke abatement exhibition, organized by the National Smoke Abatement Society in conjunction with certain government departments was opened at the Science Museum, South Kensington, by the minister of health. The president of the society, Dr H. A. Des Voeux, recalled the fact that the society was founded thirty six years ago, when London used to have from thirty five to forty thick fogs every winter, some of them lasting a week. If the conditions continued London would have become uninhabitable. The minister of health, Sir Kingsley Wood said that smoke was an insidious enemy and cost the nation many millions a year. In Elizabeth's reign proclamations were issued forbidding the use of coal in London while parliament was sitting. Conditions were better now than at the end of the last century, in spite of the fact that over four million houses had been built since 1901. The increased use of gas and electricity had helped this improvement. But there was little reason for complacency today and much had still to be done. He thought that in the future legislation would be less important than prudent administration and cooperation between public authorities, manufacturers and voluntary organizations. Domestic smoke was now the largest part of the problem.

The exhibition is designed to illustrate three things—the nature and effects of smoke, the methods of measuring air

pollution and how the nuisance can be abated. A fine series of photographs show the great smoke pall over London and the blackened clouds over Epping Forest after a London fog as well as views of Edinburgh, Manchester and other cities. There are photographs as well as specimens of stonework and bricks damaged by smoke. To demonstrate the effects on human life there are specimens of contaminated and uncontaminated lungs and a diagram showing that, while there were 137 deaths from respiratory diseases in Manchester in December 1930 a month without a fog, there were 592 in January 1931 when there were nine days of fog. An effective display came from Kew (the botanic gardens just outside London). A branch of evergreen as picked showed a great contrast from one that had been washed. There is a diagram showing how a Londoner if he lives at Kew, loses every year ninety-nine hours of sunshine through smoke, 233 hours if he lives at Westminster and 340 if he lives in the city. There is a poster of a pair of scales, which teaches that the average English family every year creates more than its own weight of smoke.

PARIS

(From Our Regular Correspondent)

Oct 12, 1936

French Surgical Congress of 1936

The forty-fifth annual meeting of the French Surgical Association was held during the week beginning October 5 at Paris. Owing to the inability of Prof. Victor Pauchet, who had been elected president last year, to be present the surgeon general of the army, General Rouvillois, acted as president.

It is the custom at all the important French congresses to appoint two members to review a subject chosen by vote and to submit the report at the next meeting. The subjects for this year's congress were (1) the results of ovarian grafts, (2) surgery in diabetes and (3) pneumonectomy.

RESULTS OF OVARIAN GRAFTS

The reporters for the subject 'Results of Ovarian Grafts' were Dr. Mocquot of Paris and Dr. Cotte of Lyons. Their monograph is an exhaustive critical review and worthy of study in the original by all those interested in the subject. Dr. Mocquot's paper took up the results of experimental work on animals, which must form the basis of clinical observations. He reported the methods of grafting: autoplasty, homoplasty and heteroplasty, as follows:

A. Autoplastic grafts. In earlier experiments the transplantation of ovaries was especially studied from the point of view of the reestablishment of the faculty of procreation, but this is less important than the question of the power of the graft to furnish internal secretions. In order to leave a portion of the surface of the graft free, it was placed on the surface of the parietal peritoneum, mesentery or omentum. When this idea was discarded, the graft was placed in cellular tissue, muscles, viscera or isolated segments of veins. Transplantations into the anterior chamber of the eye have yielded valuable information on the growth of the follicles and formation of the corpus luteum. A graft composed of the entire ovary offers resistance to the penetration of blood vessels, whereas minute fragments offer little resistance to absorption by the tissues. The best results were obtained by Pettinaria in transplanting a bisected ovary. Successful grafting is favored by the hormone effects of other endocrine organs, especially the hypophysis. When there is a lack of ovarian secretion in the organism, a functional stimulation of endocrine secretions results which favors development of the graft. Too long an interval must not elapse (not more than from five to six months in guinea-pigs) between the castration and grafting; otherwise the organism adapts itself to a newly established endocrine equilibrium with resultant suppression of the functional stimulation needed for growth of the graft. The more highly developed

elements, i. e., the follicles and corpora lutea, are the first to die if the graft is unsuccessful. Ovaries of younger are far more resistant when transplanted than are those of older animals. Even when the graft survives, the question arises whether one is not dealing with a tissue culture in a living medium.

B Homoplastic grafts Numerous experiments have shown that an ovary transplanted into an animal of the same species conserves its vitality with the formation of follicles, development and expulsion of ova. All the manifestations of the genital cycle reappear, even fecundation and gestation can follow. Homoplastic grafts, however, are less apt to be successful than the autoplasmic variety. The best results for homoplasty are obtained in animals of the same age. When the transplantation is done on castrated animals the genitalia of which show a retarded development as a result, the uterus, tubes and vagina resume their interrupted evolution and the genital cycle is reestablished.

C Heteroplastic grafts Transplantation experiments between different races of mice, guinea-pigs, rabbits, cats and dogs have been attempted. In but few cases did the grafts survive. When this did occur there was great skepticism regarding the interpretation of the histologic picture. As a rule, heteroplastic grafts die, the changes being those of either a sclerotic or an inflammatory type.

Dr. Cotte of Lyons discussed the clinical application of ovarian grafts. His conclusions, from a study of the literature and his own results, were as follows:

1 Ovarian autografts There are two principal indications: (a) In the treatment of sterility of ovarian origin. The occluded tubes present lesions that will not be improved by conservative operations, and only a salpingectomy is indicated. Instead of trying only to save the uterus and one ovary, it seems indicated, if the patient so wishes, to try to conserve the power of conception by transplanting the ovary into the uterus. He reported 200 cases in which this had been done, with twenty-one subsequent pregnancies, of which about 30 per cent terminated in miscarriage during the third or fourth month. From the point of view of technique, one should not attempt a free graft but rather implant the ovary with its pedicle attached in the uterine cavity.

(b) In the prophylactic treatment of disturbances after castration. If one admits that castration is always followed by more or less important disturbances and that the transplantation (autografts) of fragments of the ovary suffices to prevent such disturbances, this indication would hardly merit further discussion, but surgeons are far from being in agreement on this question. Hence it is difficult to formulate conclusions that will be generally accepted. As to the therapeutic value of the grafts the good results are not as constant as has been claimed. On the other hand it is true that in a certain number of cases the graft has sufficed to prevent the disturbances following castration. Cotte's observations include ninety-two cases in which the ovary was transplanted into the omentum and the uterus conserved. Of seventy-four end results, menstruation was reestablished in sixty-five (88 per cent). The ovarian function is resumed at the end of three months a little later (seven months) in cases of acute salpingitis. Ovarian autografting hence is indicated in cases in which oophorectomy is of no avail. Every effort should be made to perform conservative gynecologic operations. The surgeon ought not to perform total or subtotal hysterectomy with the idea in mind that transplanting the ovary into the labium majus will suffice to prevent the disturbances following castration. If the uterus can be conserved there is a prospect that an ovarian autograft will prevent such sequelae. Cotte believes the uterus should be conserved far more frequently than is at present the case. If this is not done, one will find few indications for ovarian autografts.

2 Ovarian homografts The results obtained at the present time with ovarian and anterior hypophysis hormones have greatly lessened the indications of ovarian autografts, especially since their biologic value is far from being proved.

3 Ovarian heterografts Their utilization in revitalizing the organism has shown that the effect is only transitory, even with pluriglandular grafts.

In the discussion, Dziembowski of Poland said that the majority of gynecologists in his country felt that the effects of ovarian grafts were only transitory and that they were either absorbed or became sclerotic in a few months, hence oophorectomy continues to be the treatment of choice, following castration.

Douay of Paris reported 167 ovarian grafts observed from 1928 to 1934, of which 128 have been followed to the present time. This permits one to evaluate the end results. There were 11 per cent complete failures and 72 per cent permanent good results. The average duration (53 per cent of the cases) of ovarian activity following grafting is two years. In all his patients, autografts were employed. If the ovary is normal, it is advisable to leave it in situ. If it is diseased it is necessary to remove a portion that can be used for grafts, contrary to current opinion. The patient need not be young. One is as apt to be successful in women just prior to the menopause. Douay believes that his method, placing the graft in the labium majus, will give the best results.

Senechal of Paris maintained that there are very few cases in which it is impossible to conserve a small portion of the ovary, sufficient to prevent the disturbances of the artificial menopause.

SURGERY IN DIABETES

The first paper on the second subject was by Fredet of Paris on general aspects, and the second by Jeanneney of Bordeaux on surgical disorders in diabetic patients. Fredet first took up cases presenting only a hyperglycemia and not requiring immediate operation. The objective in the first subgroup (hyperglycemia only) should be to reduce the high blood sugar content to the normal figure. This is comparatively easy if the hyperglycemia is of alimentary origin, i. e., a diet too rich in carbohydrates. Often it is necessary to employ insulin in addition to diet. One must begin with small doses to avoid a hypoglycemia and continue until the day of operation. In the second clinical subgroup, cases are encountered in which there is both a hyperglycemia and a glycosuria. Here the same treatment diet and insulin, is indicated as in the patients with hyperglycemia alone. Insulin is not always efficacious in reducing the glycosuria, especially if the latter is very marked. In such cases the large doses of insulin that are necessary to influence the glycosuria must be supplemented by a diet relatively rich in carbohydrates. In ordinary cases from 10 to 30 units of insulin, one half to be given before the two principal meals is indicated. In a third subgroup can be placed cases of hyperglycemia, glycosuria and acetonuria. These constitute the most serious cases from the surgical standpoint, because of the danger of coma, hence the necessity of energetic measures to reduce the acetonuria. This can often be accomplished by a two or three day diet of green vegetables and, if successful, the next task is to treat the glycosuria. In general, the problem is not so simple. The ketones have decreased but have not entirely disappeared, hence it is necessary to give a diet poor in ketone-producing substances (especially animal more than vegetable proteins) and in addition employ insulin in doses of 40 units a day for the ordinary case in which a diet rich in carbohydrates is unnecessary. When the ketones have disappeared the proteins can be increased followed by treatment of the glycosuria and hyperglycemia. Diabetic patients in this third subgroup must be adequately nourished and not given too large doses of insulin lest a hypoglycemia result. The patient

must be weighed every day. The role of insulin in such cases is not only to combat the acetoneuria but also to allow one to give a diet that will prevent starvation.

Preoperative purgation of patients with diabetes has been criticized, but Fredet maintained that, if castor oil is employed instead of saline cathartics forty eight hours before operation, supplemented by alkalis by mouth and by hypodermoclysis, the loss of liquid is compensated for and the bowel will be in more favorable condition. He was opposed to starving diabetic patients before operation. As postoperative measures the administration of sodium chloride in large amounts of fluid, carbohydrates (sugar by mouth or dextrose intravenously or by hypodermoclysis) and insulin are to be especially mentioned. The injection of insulin is to be immediately followed by a solution containing both dextrose and sodium chloride. If the patient becomes comatose, 20 units of insulin should be given intravenously every half hour and then at longer intervals (from one to two hours) as soon as the patient becomes conscious. Large doses of insulin are harmless as long as they are accompanied by administration of carbohydrates.

In diabetic patients, when immediate operation is indicated, the chief objective is to prevent coma and hence to consider the patient in a precomatose state. From 20 to 30 units of insulin must be given immediately, depending on the results of the urine examination for sugar and acetone and of the blood for the sugar content. The intravenous injection of insulin is compensated for by intravenous administration of 300 cc of a 3 per cent solution of dextrose.

Fredet quoted the statistics of the Mayo Clinic (3 per cent mortality in 2,000 operations) as showing how greatly the mortality had been reduced as the result of the use of insulin and preoperative preparation.

Jeanneney spoke of the diminution of local and general resistance in diabetic patients, which favors infection and necrosis. Infections are often followed by acidosis. Even though rendered "sugar free," the person with diabetes can never be regarded as a normal individual by the surgeon. The most to be feared are carbuncles in diabetics, 50 per cent of which ended fatally, before the discovery of insulin.

A crucial incision is advisable except in cases in which gangrene is present, in which early excision is indicated. The treatment of the diabetes should be supplemented by autohemotherapy.

In cases of moist gangrene of the extremities in diabetes, an energetic medical treatment is essential. If the arterial circulation is occluded, early amputation in healthy tissue is indicated.

In the discussion of these two papers, Jentzer of Geneva reported two cases of diabetic gangrene of the lower extremity in which diet, insulin and even periarthral sympathectomy had been of no avail. A removal of the adrenal of the same side was followed by healing of the local lesions, without amputation. On following up these patients, a disappearance of the glycosuria and acetoneuria was noted, but one of them still has a marked hyperglycemia in spite of prolonged insulin therapy. Ducuing of Toulouse found that the hyperglycemia was the most important of the three (glycosuria, acetoneuria and blood sugar content) to watch.

Fontaine, Weil and Mandel of Strasbourg said that they have studied the relation of diabetes to adrenalectomy at the suggestion of Leriche. After removal of the pancreas in animals the adrenal also was removed. They found that the latter procedure had no influence on the diabetes, being only of transitory character. The question as to whether the cortical secretions of the adrenals have an influence on the pancreas merits further study.

Leriche of Strasbourg also believes that the hyperglycemia is of more importance clinically than the glycosuria. In diabetic gangrene of the lower extremities, the question of whether an

arteritis is present or not is of vital interest. Oscillometry is subject to error, but this is not true of arteriography. If this does not reveal an arteritis, it is not necessary to remove as much tissue. If an arteritis exists, only a high amputation is of any avail. One should never be in too much of a hurry to amputate.

Mayer of Brussels was able to avoid amputating in a case of diabetic gangrene of the foot by performing a periarthral sympathectomy, associated with preoperative and postoperative insulin therapy.

Rathery of Paris places more reliance on the glycosuria than on the sugar content of the blood. It is essential to avoid both dehydration and starvation in the preoperative preparation. During the postoperative period, dextrose solution by rectum and insulin are to be especially recommended, also heart tonics and sodium bicarbonate. He does not favor wide removal of carbuncles. As to gangrene of the lower extremities, one should not operate too soon. If amputation is indicated, it should be at as high a level as possible. Oscillometry does not give accurate information, and arteriography is too dangerous a diagnostic procedure in diabetes.

PNEUMONECTOMY

The reporters on the third subject were Monod of Paris and Bonriot of Grenoble, who said that the term "pneumonectomy" ought to be applied only to operations in which either the entire lung (total pneumonectomy) or one or several lobes (lobectomy) were removed, with ligation of the pedicle. To atypical, i. e. partial, removal the term fragmentary pneumoresection should be applied. After a review of the history of the subject, they stated that two problems the technical and the clinical, presented themselves. The technical problem included our present knowledge of the anatomy, physiology and pathology of the lungs. The last named is the most important from the surgical standpoint, because of the great risks due to infection which it is necessary to prevent. The authors next reviewed the various methods of performing pneumonectomy and their indications. These methods could be divided into (a) cases in which there were no pleural adhesions and (b) those presenting them. As to lobectomy, the one-step method should be reserved to aseptic or slightly infected cases. Two-step operations had a much lower mortality. Not only close team work between the surgeon and the internist is essential, but the surgeon must have trained assistants and special apparatus. It is preferable to operate in a relatively large room, in air that is conditioned and sterilized.

The clinical problem involves a study of the three indications for pneumonectomy that exist at present (a) primary cancer of the lung, (b) bronchiectasis and (c) pulmonary abscess. The first of these constitutes from 7 to 8 per cent of all cancers; the outcome has been hitherto always fatal and at present no other method of treatment than pneumonectomy is available. In the latter, removal can be successful if the neoplasm involves only the first 2 cm. of the main bronchus and if no metastases exist in the pleura, chest wall, diaphragm or mediastinal lymph nodes. Cases without recurrence in which operation was performed five, six, seven and nine years ago show that the cited essentials of success can be fulfilled. The types most suitable for operation fortunately include cases in which an early diagnosis is possible. Only total pneumonectomy, with separate ligation of the various components of the pedicle, should be attempted.

As to the second indication, bronchiectasis, the question is: In which cases is one justified in performing pneumonectomy or lobectomy? It is the general opinion that a bronchiectasis is a relatively benign condition, while pneumonectomy or lobectomy is a serious procedure. Now the prognosis of bronchiectasis is still an unsolved problem. If it could be shown that the majority followed a benign course, only the severe

complicated cases could be considered as calling for operative measures. This, however, would limit surgery to hopeless cases, thus limiting the field in the future to cases with a potential high operative mortality. But if the clinician could learn to distinguish mild from severe cases at an early period, pneumonectomy would be able to forestall much future trouble.

As to abscess of the lung, the only indication for pneumonectomy or lobectomy is in cases that do not improve under other forms of treatment. This would include single old centrally located abscesses and those which are complicated by bronchiectasis.

The discussion was opened by Professor Sergent who reviewed the indications for pneumonectomy. A progressive fragmentary pneumonectomy or even a simple pneumotomy will suffice for the majority of lung abscesses if carried out early, but if one waits until a progressive pyosclerosis complicated by secondary bronchiectases develops and the lobe or lung is transformed into a veritable purulent sponge more radical measures are needed. As to chronic fetid bronchiectases whatever their origin, nothing except operative removal can have an influence on a sclerotic mass of tissue penetrated by large dilated bronchi. Before a lobectomy is performed however a thorough exploration with iodized oil must be carried out to ascertain the condition of the other lobe or of the other lung, in the case of a pneumonectomy.

As to cancer of the lung the chief problem is early diagnosis, because in addition to the serious operative risks the post-operative complications in the form of overlooked metastases cannot be underestimated.

Professor Bezançon another internist who specializes in pulmonary disorders, said that much remains to be learned concerning bronchopulmonary suppuration. It is only through frequent radiographic examinations with and without iodized oil, as well as a study of the pathology and bacteriology that one can gain a more accurate idea of the clinical picture. Every case must be considered individually so that the chances for spontaneous recovery can be weighed as opposed to operation.

Another internist, Dr. Leon Kindberg said that the principal indication for lobectomy is in cases of bronchiectasis if possible at an early stage. The classic theory "progressive sclerosis of the entire respiratory tract following recurrent little understood infections" can be applied to only the minority of cases. The two groups that ought to be borne in mind as suitable for operation are (1) acquired dilatation of chronic nature or following a bronchiectatic abscess and (2) superinfected congenital dilatation, a localized lesion. The prognosis in such cases is not a favorable one (from eight to ten years of life) and life soon becomes intolerable. Hence it is logical to undertake a radical treatment in such cases. Bronchiectases with a benign clinical course, aged patients or generalized lesions are to be excluded as potential operative cases. Kindberg is very enthusiastic with regard to lobectomy for these two groups of cases.

Edwards of London prefers a one-step operation independent of the condition of the pleura. For bronchiectasis he has performed 113 lobectomies (one bilateral) with 14 per cent (sixteen deaths) mortality. Of ninety-seven patients who survived the operation, twelve died (of intercurrent disorder or tuberculosis) from one to five years after the operation. Sixty-four patients are alive from one to seven years after operation. Thirty-five of these are free from any evidence of bronchiectasis. Seven total pneumonectomies have been done for bronchiectasis with two (28 per cent) deaths. As to cancer he has performed sixteen lobectomies with three operative deaths (19 per cent) eight recurrences and six (37 per cent) cures dating back two, six, seven and nine years since the operation. Six total pneumonectomies were done on patients from 31 to 63 years of age with two operative deaths, one metastasis and three survivals.

Maurer, Rolland and Dreyfus-Le Foyer of Paris emphasized the great value of local anesthesia for certain cases. The necessity

of ample drainage in lobectomies for infected lesions and the fact that less radical operations than lobectomy should be given a thorough trial in cases of pulmonary abscess. Under the last named they include, from personal experience, (a) pneumotomy with resection of the external wall of the cavity for superficial localized abscess, (b) phrenicectomy for low junctional lesions with ample drainage through a bronchus and (c) partial superior thoracoplasty in suppurating high lying lesions. It is difficult in cases of cancer to determine radiographically whether or not the mediastinal lymph nodes are involved.

BERLIN

(From Our Regular Correspondent)

Sept. 14, 1936

Race, Marriage Problems and Eugenics

To the long list of discussions of race that have appeared in present-day Germany, a new study has recently been added that distinguishes itself from many another printed utterance on the same topic by its scientific character. It is in the form of a lecture on ethnological questions given by Prof. Rudolf Fick, Berlin anatomist, before the Prussian Academy of Science. Many persons who, following the present fad set themselves up as authorities on questions of race would be surprised to know that an exact determination of race from the shape of the skull requires no less than 4,000 measurements. However, even if one approaches the question in its most fundamental aspect, any study of cranial characteristics will present difficulties since the nations of today represent not separate racial entities but rather ethnic mixtures. As Fick stated the antiquity and the origin of the individual races are still controversial questions, despite the discoveries of prehistoric skeletal remains and the results of geological research on the history of the development of plants and animals. Our knowledge of the racial migrations still treads on rather uncertain ground. The abstract concepts of race and type are in need of more precise definitions. One ethnological question, namely, that of the invariable character of hereditary predisposition, is greatly complicated by the phenomena of mutations, a race of men undergoes modification even in the absence of interbreeding with outsiders. Finally it should be remembered that estimates of the extent of the Nordic racial element that has gone into the formation of the German nation exhibit wide differences. So it will be seen that there is still no dearth of unsolved ethnological problems.

The foregoing outline of Fick's discussion may be supplemented by a few remarks on developments in Germany with reference to racial questions. A recent report has it that the National Center for Racial Research has been swamped with inquiries with reference to the best means of maintaining accurate genealogical data. The members of many professions (writers, for example) must furnish the so-called great proof of their ancestry to the year 1800. For most persons however, less formidable proofs are sufficient. For ordinary usage officialdom has devised a small genealogical passport known as a *mirror of ancestry*. This document contains official genealogical data through the holder's grandparents and further space is provided for notations concerning the great grandparents and future marriages. Moreover, it is interesting to note that the national *fürher* of medicine Dr. Wagner has recently deprecated the fact that an increasingly large number of incompetent persons are concerning themselves with questions of race and as a consequence causing inferiority complexes to develop among our people. It is not proper that such and such persons should be set down as of higher or lesser value to the community on the basis of any sort of imaginary characteristics or of erroneous ideas about various races that compose the nation.

To go from the general to the specific Stettin has been the first German city to undertake an official genealogical card index designed to contain hereditary-biologic data on all the 270,000 inhabitants. In order to lay the groundwork for this project, questionnaires were distributed among the schools. The first 3,000 blanks already filled out have been received at the municipal bureau of health. There the data will be further coordinated, formed into genealogical tabulations and kept down to date. Also of interest is a suggestion appearing in the *Frankfurter Zeitung*, one of the most prominent German newspapers, that even now the extant literature of the racial question, as a perusal will show, fails to conform to the opinions of experts on racial policies. The principal trouble may be that a combination of political and scientific views is not yet evidenced by the majority of authors.

On the question of mixed marriages with Jews a decision has recently been handed down by the supreme court. Many of the so-called German blooded wish to have their own such marriages dissolved, in part for economic reasons in part as a consequence of the new officially propagated views. Although the legislator subscribes to the principle that mixed marriages, which have existed for long periods (and which frequently, till a short time ago, were quite happy) cannot be lightly dissolved the supreme court has decided that such mixed marriages, since the relationship is qualified by racial dissimilarity, may be destroyed more easily than other marriages and that their continued existence is no longer to be expected.

Racial dishonor through sexual intercourse with Jews or partial Jews is recognized in Germany as a valid legal concept. According to a communication of Dr. Kuhn from the national ministry of justice, of all persons legally sentenced for this offense to date 17.8 per cent were of German blood and 82.2 per cent were Jews. Of the defendants in such cases, seven eighths of the Germans and four fifths of the Jews were charged with offenses committed prior to the enactment of the Nuremberg laws.

According to the latest statistics on insanity compiled by Professor Rudin there are from 200,000 to 250,000 cases of schizophrenia in Germany and quite as many cases of epilepsy. At least 1 per cent of the total population must be classed as feeble-minded, but since various investigators have not agreed as to where the border between feeble-minded and normal should be drawn, one must place the figure at from 1 to 4 per cent of the entire population.

At a meeting of the National Socialist League of Physicians, Dr. Wagner, the national führer of medicine, cautioned against the philosophy that all persons who appear to present bad heredity must submit to sterilization. Negative hereditary factors should not, as all too frequently happens, be shoved to the fore. The discussion of these questions is by no means yet at an end. A court in Frankfurt-on-the-Main has recently decided that the marriage contract between a eugenically healthy person and a person with defective heredity is not permissible even if the latter consents to sterilization. It is not right that a healthy person capable of reproduction should be bound to a sterile person. On the other hand, a man was recently sentenced to two months' imprisonment for an insult to a person of defective heredity. The insult had to do with the sterilization of the complainant's son, which had been performed on account of congenital feeble-mindedness. In a recent far-reaching decision the Munich superior court dismissed as trivial objections to sterilization based on religious grounds. The concept of sterilization as an undeserved punishment is erroneous.

The charge for a sterilization by roentgen irradiation, including the fee of the physician who administers the treatment is fixed at 50 reichsmarks, for sterilization by irradiation with a radioactive substance the charge is 40 reichsmarks and this includes the initial examination and the medical measures necessary for a proper arrangement of the radium deposit.

ITALY

(From Our Regular Correspondent)

Sept 15 1936

Social Administration of Medical Care

Regulations have been given for the establishment of insurance societies for the administration of medical care to workers of different social standing in all Italian provinces. The societies will function under regulations which differ only in relation to the amount of prizes given when one marries and at the birth of children and as to the expenses of funerals. The insured has his medical care paid for and he is free to select his own physician. If he needs hospitalization the insurance company is obliged to provide it. The Cassa Nazionale Malattie for department store employees has been functioning for several years, and about 200 firms have their employees insured with this society. Branches of the society were established at Libia last July. The benefits of rural insurance for maternity cases which, up to now, was given only to women working in rural industries is now being given also to women working on farms. Farm mothers will be given a fixed cash amount of 100 lire (\$5) for each delivery aside from the necessary hygienic and medical service during pregnancy, delivery and the puerperium. The expenses made by the insurance society on farm mothers are met with a fund from contributions of the employers at a rate of 5 lire (\$0.25) a year for each insured farm woman, an annual payment from the insured farm women of 2 lire (\$0.10) and a contribution from the state. The new insurance society will insure about 1,500,000 farm women and will give services in about 100,000 deliveries a year. All women between the ages of 15 and 50 working on farms have to be registered. Insuring farm mothers became a need from the high mortality rate (3,000 women a year) in pregnancy, labor and the puerperium in those women. The annual mortality of new-born infants in Italy is as follows: 20,000 infants die from obstetric complications during the first five days of life, and 40,000 are born dead. By adding the figures from abortions and of infants who die in the first month of life, there is a loss of 160,000 lives for each million infants born.

Plans are being made for the establishment of an insurance society for administration of medical care to artists and professionals.

"Synthetic Wool," a Possible New Suture Material

Professor Mozzetti, in a lecture recently delivered before the Società Medico-Chirurgica of Venice, reported results on the use of synthetic wool in surgery, especially in laparotomy. Synthetic wool is the precipitate of milk casein. It can be spun into a fine thread, about 30 microns thick, which can be wound and woven. The product can be sterilized. The speaker left small wads of unwoven sterilized synthetic wool within the peritoneal cavity of one lot of rats and rabbits. In rats and rabbits in another lot he introduced synthetic wool threads through the abdominal wall and left the threads in the subcutaneous tissues, between the aponeurosis and the muscles and within the muscles. Later he made microscopic studies of the tissues of all the animals. The speaker exhibited moving pictures showing the tolerance that living tissues have to this synthetic material also that the latter, when in contact with living tissues, especially the peritoneum induces a polymorphonuclear neutrophil leukocytosis of short duration followed by progressive reabsorption of the material by the tissues. The reabsorption is slower in the spaces of the aponeurosis than in the other spaces but its tolerance to the material is the same in all the tissues. The speaker points out the possible surgical value of synthetic wool, which might later perhaps, be a substitute for catgut and silk. The product is made up of nucleo albumins.

Marriages

ALFRED G. GRUNWELL, Surg. Lieut. Commander, U. S. Navy, retired, Punta Gorda, Fla., to Miss Hattie Griffin at Black Mountain, N. C., September 3.

ROBERT BRECKINRIDGE WARFIELD, Lexington, Ky., to Dr. EMILY ELIOT STURGIS of Chevy Chase, Md., September 26.

ALBERT F. HARDT, Williamsport, Pa., to Miss Edythe Marie Black of Elmira, N. Y., in Glencarlyn, Va., August 31.

KENNETH BROWN ROTHEX, Spring Lake, N. J., to Miss Barbara Asquith Scott of Charlotte, N. C., August 14.

EDWIN BELL VAN NESS, Gulfport, Miss., to Miss Charlotte Allen of Bloomington, Ill., in August.

CHARLES FLOYD GRIFFITH, Griffin, Ga., to Miss Mary Riviere of Barnesville, in Macon, August 16.

JOSEPH J. GRAMLING JR., Wauwatosa, Wis., to Miss Marcy Walsh of Chicago, August 29.

LOYD HISRICHE, Batesville, Ind., to Miss Ella Whipple of Mount Vernon, August 16.

CLINTON A. HARDESTY, Paragould, Ark., to Miss Mildred McDaniel, September 1.

Deaths

William Buchanan Wherry, Cincinnati, Rush Medical College, Chicago, 1901, professor of bacteriology and hygiene at the University of Cincinnati College of Medicine, formerly known as the Ohio-Miami Medical College of the University of Cincinnati, where in 1909 he was assistant professor of bacteriology and associate professor from 1910 to 1913, assistant in bacteriology at the University of Chicago from 1901 to 1902, and associate from 1902 to 1903, professor of bacteriology, Oakland (Calif.) College of Medicine and Surgery in 1907, bacteriologist for the board of health of San Francisco and acting assistant surgeon on plague duty for the U. S. Public Health Service from 1907 to 1909, bacteriologist for the United States government laboratories in Manila, P. I., from 1903 to 1905, for many years member of the city board of health, member of the American Society for Experimental Pathology, visiting professor at the School of Hygiene, Manila, P. I., from 1929 to 1930, director of service, Cincinnati General Hospital, consultant in the U. S. Public Health Service, in 1914 with others reported the first case of tularemia in man which was proved bacteriologically to be due to *Bacterium tularense*, aged 60, died, November 1, in the Holmes Hospital, of cerebral embolism.

Wade Wright of Roxbury, Conn., Harvard University Medical School, Boston, 1914, formerly lecturer in pharmacology at the Columbia University College of Physicians and Surgeons and instructor of industrial medicine at the Harvard School of Public Health, served during the World War, for several years was in charge of the industrial clinic operated by Harvard as a department for clinical research in occupational disease problems at the Massachusetts General Hospital, at one time assistant medical director of the Metropolitan Life Insurance Company, aged 46, died, August 25, in Wallingford of pulmonary tuberculosis.

John Shade Turner, Dallas, Texas, Louisville (Ky.) Medical College, 1889, member and past president of the State Medical Association of Texas, served during the World War at one time professor of mental and nervous diseases at Baylor University College of Medicine and professor of neurology at the Southern Methodist University Medical Department, formerly member of the city board of health, medical director of the Southland Life Insurance Company, aged 70, died August 29, in the Ozark Mountain range, near Fayetteville, Ark.

Robert Bland Grubbs of Lieut. Colonel, U. S. Army, retired, Los Angeles, Columbian University Medical Department, Washington, D. C. 1899, entered the regular army as an assistant surgeon in 1901, was made a captain in the medical corps in 1906, a major in 1910 and retired with rank of lieutenant colonel in 1917 for disability in line of duty, served during the World War, aged 64, died August 18, in Stockholm of diabetes and arteriosclerosis.

Schuyler Weston Hammond of Rutland, Vt., University of Vermont College of Medicine, Burlington 1895, member of the House of Delegates of the American Medical Association

in 1905, past president and vice president of the Vermont State Medical Society, past president and member of the Vermont State Board of Medical Registration, on the staff of the Rutland Hospital, aged 69, died, September 22.

Henry Beckles Chandler, Arcadia, Calif., University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1880, member of the Massachusetts Medical Society and the American Ophthalmological Society, professor of ophthalmology emeritus, Tufts College Medical School, Boston, formerly consulting surgeon to the Massachusetts Eye and Ear Infirmary, Boston, aged 81, died, October 7.

Robert Spear, East Chicago, Ind., Trinity Medical College, Toronto, Ont., Canada, 1897, member of the Indiana State Medical Association, served during the World War, formerly member of the school board, fellow of the American College of Physicians, aged 68, on the staff of St. Catherine's Hospital, where he died, August 23, of lobar pneumonia and osteomyelitis of the left humerus.

Carl Philip Bauer of Chicago, Rush Medical College, Chicago, 1922, assistant clinical professor of obstetrics and gynecology at his alma mater, member of the Central Association of Obstetricians and Gynecologists, fellow of the American College of Surgeons, assistant attending obstetrician and gynecologist to the Presbyterian Hospital, aged 40, died September 19, of coronary thrombosis.

Lewis Stanton Ramsdell, Manistee, Mich., Rush Medical College, Chicago, 1900, member of the Michigan State Medical Society, fellow of the American College of Surgeons, veteran of the Spanish-American and World wars, formerly mayor and member of the board of education, aged 61, on the staff of the Mercy Hospital and Sanitarium, where he died, October 3, of cirrhosis of the liver.

Riley Moore Waller, St. Joseph, Mo., Washington University School of Medicine, St. Louis, 1920, member of the Missouri State Medical Association, on the staff of the Missouri Methodist Hospital, fellow in surgical pathology at the Mayo Foundation from July 2, 1923, to January 1, 1927, aged 40, was found dead of an accidental bullet wound in August.

Eugene Arthur Stanley, Waterbury, Vt., Jefferson Medical College of Philadelphia, 1904, member of the Vermont State Medical Society, the American Psychiatric Association and the New England Society of Psychiatry, aged 61, medical superintendent of the Vermont State Hospital for the Insane, where he died, August 19, of arteriosclerosis.

Frank Herbert Smith, Amherst, Mass., University of Pennsylvania Department of Medicine, Philadelphia, 1898, member of the Massachusetts Medical Society, for seven years physician to the Amherst College, formerly a member of the school committee, and member of the state legislature, aged 65, died, August 23, of coronary thrombosis.

William Henry Buskirk of Los Angeles, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904, fellow of the American College of Surgeons, served during the World War, for many years on the staff of the Hollywood Hospital, aged 55, died, August 7, of pneumonia following an operation for duodenal ulcer.

Albert Wilkinson of Dallas, Texas, University of Nashville (Tenn.) Medical Department, 1900, fellow of the American College of Surgeons, member of the staffs of the Methodist, Parkland and St. Paul's hospitals and associate member of the staff of the Baylor Hospital, aged 63, died, August 19, of hypertension and cerebral hemorrhage.

William Joseph Allen, Orange, N. J., Fordham University School of Medicine, New York 1920, member of the Associated Anesthetists of the United States and Canada, member of the staffs of the Orange Memorial Hospital and St. Mary's Hospital, aged 42, died, September 2, in Asheville, N. C., of pulmonary tuberculosis.

Leroy Stewart Townsend, Beaver Falls, Pa., Western Pennsylvania Medical College, Pittsburgh 1895, member of the Medical Society of the State of Pennsylvania, served during the World War, aged 65, on the staff of the Beaver Valley General Hospital, where he died, August 24, of cerebral hemorrhage.

Peter Bachman Witmer, Abilene, Kan., Jefferson Medical College of Philadelphia 1896, member of the Kansas Medical Society, past president of the Dickinson County Medical Society, formerly on the staff of the Dickinson County Memorial Hospital, aged 67, died, August 24, of coronary thrombosis.

John Percy Wade, Baltimore, College of Physicians and Surgeons, Baltimore, 1891, member of the American Psychiatric Association, at one time superintendent of the Spring Grove State Hospital, Catonsville Md. aged 65, died, August 27 in the West Baltimore General Hospital, of a gunshot wound.

Joseph Graham Mayo ♂ Rochester, Minn., State University of Iowa College of Medicine Iowa City 1927, son of Dr. Charles Horace Mayo on the staff of the Mayo Clinic aged 34 was killed near Alma Wis. November 9, when the automobile in which he was riding was struck by a train.

Ross Elliot Black, New London, Conn., Columbia University College of Physicians and Surgeons, New York 1905 member of the Connecticut State Medical Society, served during the World War, health officer of Waterford on the staff of the Home Memorial Hospital, aged 56 died September 27.

Robert Whitehead, Victoria, Va., University College of Medicine, Richmond 1913 member of the Medical Society of Virginia, formerly secretary of the Lunenburg County Medical Society, served during the World War, aged 46, died, August 14 in Richmond of cirrhosis of the liver.

Robert George Barckley ♂ Milford Pa. Jefferson Medical College of Philadelphia 1891 formerly county medical director, on the staff of the Deerpark Sanitarium, Port Jervis N. Y., aged 76, died September 26 in the Jefferson Hospital Philadelphia, of carcinoma of the lip and neck.

George F. Washburne, Glen Ellyn Ill., Chicago Homeopathic Medical College 1885, formerly health officer for the board of health of Chicago at one time physician in charge of the Spring Hill Sanitarium Hastings-on-the-Hudson, N. Y., aged 81 died, August 12, of arteriosclerosis.

Ralph Henry Spencer, Grand Rapids, Mich. University of the City of New York Medical Department 1879 member of the Michigan State Medical Society, for many years on the staff of the Butterworth Hospital aged 82, died suddenly, August 7, of cerebral hemorrhage.

Charles S. Bendure, Baxter Springs, Kan., College of Physicians and Surgeons Medical Department of Kansas City University, 1897, member of the Kansas Medical Society, formerly mayor of Baxter Springs, aged 76, died September 12 of carcinoma of the rectum.

David Benjamin Tuholski ♂ Brockton, Mass. University of Pennsylvania Department of Medicine, Philadelphia 1907 past president of the Plymouth County Medical Society, at various times health officer of Brockton, aged 56, died, August 31 of coronary thrombosis.

John James Wharton, Washington D. C., George Washington University School of Medicine Washington 1905, member of the Medical Society of the District of Columbia, aged 63 died August 14 of hemiplegia, cerebral hemorrhage and arterial hypertension.

Alfred R. Warden, Grafton, W. Va. Western Reserve University Medical Department Cleveland 1886 member of the West Virginia State Medical Association, formerly member of the state board of health and county health officer, aged 78 died, August 20.

Joseph B. Shaw ♂ Trenton N. J., University of Pennsylvania Department of Medicine, Philadelphia 1885 formerly mayor of Trenton for many years on the staff of the Mercer Hospital aged 75 died August 14 of arteriosclerosis and cerebral hemorrhage.

William Bowen Scull ♂ Philadelphia University of Pennsylvania Department of Medicine Philadelphia 1885 member of the House of Delegates of the American Medical Association in 1911 and 1920, aged 73, died October 1 in the Episcopal Hospital.

Harry Percival Woley ♂ Chicago College of Physicians and Surgeons Medical Department of Columbia College New York 1890 for many years connected with the New York Life Insurance Company aged 72, died, August 12, in a hospital at Evanston Ill.

Frederick Ellsworth Sweetsir ♂ Merrimac Mass., Medical School of Maine, Portland, 1888 for many years member of the school committee on the staff of the Amesbury (Mass.) Hospital aged 69, died September 29, of angina pectoris and myocarditis.

Ralph Allen Smith, Tiffin Ohio Western Reserve University School of Medicine 1935, resident on the staff of the Women's and Children's Hospital Toledo aged 26 died August 10 in the Miami Valley Hospital, Dayton of cerebral hemorrhage.

Frank L. Truitt ♂ Indianapolis, Medical College of Indiana Indianapolis 1904 medical director, second vice president and secretary of the Reserve Loan Life Insurance Company, aged 55, died, August 13, in the Methodist Hospital, of coronary thrombosis.

William Scaif Beaty, Poplar Grove, Ark., University of Louisville (Ky.) Medical Department, 1892 member of the Arkansas Medical Society, aged 73, died, September 2, in a hospital at Memphis, Tenn., of prostatic retention and coronary occlusion.

Katharine Anne Corey Ford, Van Buren, Ind., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883, for many years a medical missionary in China, aged 80, died, August 11, of fracture of the hip due to a fall and paralysis agitans.

John Somers Wimberly, Branchville, S. C., Medical College of the State of South Carolina Charleston, 1901 served during the World War, aged 56, died August 26, at his summer home in Hendersonville, N. C., of nephritis and hypertension.

Ernest Payne Van Arsdall, Danville, Ill., Loyola University School of Medicine Chicago, 1916, past president and secretary of the Cass County Medical Society, aged 48 died, August 14 at the Lakeview Hospital, following a herniotomy.

Jesse Lee Mitchell, San Antonio, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1905 member of the State Medical Association of Texas, aged 55, died, August 2, of encephalitis and pulmonary tuberculosis.

Howard Louis Wilkinson, Hamilton, Ohio, Ohio State University College of Medicine, Columbus, 1911 member of the Ohio State Medical Association, served during the World War, aged 51, died, August 29, of cerebral hemorrhage.

Charles Ignatius West, Washington, D. C., Howard University College of Medicine Washington, 1895 professor emeritus of topographical and clinical anatomy at his alma mater, aged 67, died, August 4, of coronary thrombosis.

James Amasa Hampton Webb ♂ Wichita, Kan. Kansas Medical College, Topeka 1899 member of the Radiological Society of North America, served during the World War, aged 58, died, August 4, of carcinoma of the left lung.

Paterno C. Pavino, Manila P. I., University of the Philippines College of Medicine, Manila, 1932, member of the Philippine Islands Medical Association, junior resident to the Philippine General Hospital, aged 31, died, July 23.

William Hay Young ♂ Fredonia, Kan. Eclectic Medical University, Kansas City, 1904, past president of the Wilson County Medical Society, for many years county health officer, aged 63, died, August 13, of mesenteric thrombosis.

Jesse H. Beekman, Sayreville N. J., Hahnemann Medical College and Hospital, Chicago 1888, member of the Medical Society of New Jersey, for many years school physician, aged 81, died, September 24, of chronic myocarditis.

Frank Elmer Phillips, North Chelmsford, Mass. College of Physicians and Surgeons, Baltimore, 1903, member of the Massachusetts Medical Society aged 65, died, August 27, of coronary occlusion and cerebral hemorrhage.

James Freeman Williamson, Pleasantgrove, Miss., University of the City of New York Medical Department 1878 aged 82, died, August 24, in the Baptist Memorial Hospital Memphis Tenn., of bacillary dysentery.

Milton Steiner, New York University and Bellevue Hospital Medical College New York 1933 intern at the Mount Sinai Hospital, aged 27, died, August 10, in the Desert Sanatorium, Tucson, Ariz., of heart disease.

Almond G. Phillips, Cleveland Eclectic Medical Institute Cincinnati 1888 at one time coroner of Lake County aged 83 died, August 25, in the City Hospital, of benign hypertrophy of the prostate and pyelonephritis.

Milton Dallas Van Horn, Churchville N. Y. Medico-Chirurgical College of Philadelphia, 1891, for many years member of the board of education, aged 70, died, August 25 of chronic nephritis and myocarditis.

John Silas Lankford ♂ San Antonio, Texas, University of Louisville (Ky.) Medical Department 1882, past president city board of health and city board of education, aged 77, died, September 21 of myocarditis.

Willis S. Watson, Okmulgee Okla. Missouri Medical College, St. Louis 1882 member of the Oklahoma State Medical Association aged 81, died August 9, in a local hospital, of cerebral hemorrhage.

James Edwin Smithwick ☉ Jamesville N C, University College of Medicine, Richmond, Va, 1897, aged 66 died August 24, in a hospital at Durham, of lymphosarcoma and bronchopneumonia

Frances Lewis Bishop ☉ St. Louis University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893 aged 72 died, September 11, in a hospital at Cleveland of bronchopneumonia.

Gerhard Kaemmerling, San Diego Calif, National University of Arts and Sciences Medical Department, St Louis 1915, aged 55, was found dead, August 7, of myocardial degeneration

William C Thomson, Detroit, Detroit College of Medicine 1896 aged 70, died August 17, in the Tolfree Memorial Hospital, West Branch Mich of injuries received in an automobile accident

Charles Frank Werner ☉ St. Cloud Wis, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, aged 62 died August 26, of angina pectoris

Benjamin Robert Benson Jr, Cockeysville, Md University of Maryland School of Medicine, Baltimore, 1907, aged 51, was killed instantly, September 22, in an automobile accident

Wilfred Lorne Atkinson, Selkirk, Manit. Canada Manitoba Medical College, Winnipeg, 1911, aged 50, died, September 15, of myocardial fibrosis, arteriosclerosis and hypertension

Fred Gilbert Vosika, Wilber, Neb John A Creighton Medical College, Omaha, 1918, member of the Nebraska State Medical Association, aged 46, died, August 26, of myocarditis

Torstein A Lid, Marinette, Wis, College of Physicians and Surgeons, Chicago, 1896, aged 68, died, August 15, in the Marinette and Menominee Hospital, of myocardial degeneration

William Obie Dodson ☉ Willow, Okla, Louisville (Ky) Medical College, 1904, past president of the Greer County Medical Society, aged 55, died, August 5, of angina pectoris

Niels Victor Mikkelsen, Park Ridge Ill Chicago College of Medicine and Surgery, 1910, on the staff of the Lutheran Deaconess Hospital, Chicago, aged 56, died, August 24

William D'Arcy Chace, Pleasanton, Calif, University of California Medical Department, San Francisco 1896, aged 62, died, July 8, of myocarditis and carcinoma of the stomach

Gunn Julius Busck, Westfield, N Y Columbia University College of Physicians and Surgeons, New York, 1902 aged 65 died August 18 of carcinoma of the stomach

Charles C Whitsett, Freeport Ohio, Medical College of Ohio, Cincinnati, 1882, aged 76 died August 26, in the Ohio Valley General Hospital, Wheeling, W Va, of uremia

Archie Clark Woodward, Decorah Iowa State University of Iowa College of Homeopathic Medicine, Iowa City, 1894, aged 74, died, August 27, of coronary sclerosis

Arthur Ambrose Swanick, Saratoga Springs, N Y University of the City of New York Medical Department 1893, aged 67 died, August 22 of coronary sclerosis

William Alexander Hale, Mobile, Ala, Chattanooga (Tenn) Medical College, 1906, also a druggist, aged 54, died, August 7, in a local hospital of cholecystitis

Mayville Sumpter Kelliher, Lompoc Calif Hahnemann Medical College and Hospital of Philadelphia, 1891, aged 72, died, July 17, of carcinoma of the pancreas

Samuel James Hindman, Los Angeles College of Physicians and Surgeons Baltimore 1881 aged 80 died, August 9, of cerebral hemorrhage and arteriosclerosis

Elroy Vernon Bishop, Cleveland Heights, Ohio Cleveland Homeopathic Medical College, 1901 aged 62, died in September of chronic encephalitis and pneumonia

Melvin J Williams, Independence Mo Medical College of Indiana, Indianapolis 1881 aged 82 died, August 11 of arteriosclerosis and bronchopneumonia

Porter W Barbe, Oswego Kan Cleveland Medical College, 1880, member of the Kansas Medical Society, aged 90 died September 7 of prostatitis

Oscar Martin Newton, Mass Tufts College Medical School Boston 1910, aged 57 died August 30, in Rockport, of acute dilatation of the heart

James Frazer MacPherson San Diego Calif University of Buffalo School of Medicine 1892 aged 74 died August 27, of arteriosclerosis and nephritis

Hugh W Buckingham, Mahaffey, Pa, Jefferson Medical College of Philadelphia, 1887, aged 81 died, August 31, of chronic interstitial nephritis

Maximilian George Wiese ☉ Buffalo, University of Buffalo School of Medicine, 1931, aged 29, died, August 29, of influenza and endocarditis

Walter M Odum, Brunswick, Ga, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1911, aged 48, died, August 23 of pneumonia

Joseph H Todd ☉ Wooster, Ohio, Bellevue Hospital Medical College, New York, 1865, aged 99, died, August 11, of coronary arteriosclerosis

Edward Franklin Dann, San Diego, Calif Rush Medical College, Chicago, 1870, Civil War veteran, aged 90 died August 14, of senility

William Wilberforce Carter, Wathena, Kan, Jefferson Medical College of Philadelphia, 1873, aged 86, died, August 4 of arteriosclerosis

John Albert Vallery, Memphis, Tenn, Chicago Hospital College of Medicine, 1915, aged 46, died, July 20, in St Joseph's Hospital

Robert Lincoln Finley, Du Quoin, Ill, Hering Medical College, Chicago, 1912, aged 49, died, August 18, at Thebes, of arteriosclerosis

Edgar Allen Ross, St Paris, Ohio, Kentucky School of Medicine, Louisville, 1896, aged 65 died, August 31, of cerebral hemorrhage

William Henry McKeever, Philadelphia, Hahnemann Medical College of Philadelphia, 1909, aged 58, died, August 25, of nephritis

Sidney Scott Prather, Cincinnati, Louisville (Ky) Medical College, 1897, served during the World War, aged 63 died, July 17

John Wolfe, Delphos, Ohio, Ohio Medical University, Columbus, 1896, served during the World War aged 69, died, July 9

John E Outwater, Bronson, Mich, Eclectic Medical Institute, Cincinnati, 1882, aged 90, died, August 31, of cerebral hemorrhage.

Henry McG Marsh, Danville, Ky, Homeopathic Hospital College, Cleveland 1884, aged 75 died August 20 of cerebral hemorrhage

Hayes Abernathy, Adamsville, Tenn Memphis Hospital Medical College, 1903, aged 61, died, September 3, of cerebral hemorrhage

Charles Leonard Ferris, Carthage, Ill, Rush Medical College, Chicago, 1878 aged 82, died, August 9, of chronic myocarditis

Carl Schumann, Brooklyn, Long Island College Hospital, Brooklyn, 1909, aged 62, died, August 4, of carcinoma of the gallbladder

Marcus L Perry, Tulsa Okla. College of Physicians and Surgeons, Dallas, Texas, 1906, aged 66, died, August 15, of pneumonia

Edward H Johanning, Cincinnati, Medical College of Ohio, Cincinnati, 1896 aged 62, died, August 17, of pelvic peritonitis

J M Hamilton, Downsville, La, Medical College of Alabama, Mobile, 1880, aged 88, died, August 7, of dilatation of the heart.

Ugo Sissa, New York Eclectic Medical College, Cincinnati, 1915, died, August 22, of meningococcal encephalitis and heart disease.

C Lambert Townsend, Joliet Ill, Chicago Medical School, 1922, aged 52 died, July 15 in St Joseph's Hospital

James Ross McCabe, Strathroy, Ont Canada, Trinity Medical College, Toronto, 1889, aged 78 died, August 7

James A Green, Amarillo Texas Memphis (Tenn) Hospital Medical College, 1890, aged 72, died, August 22

Francis Vincent Moore, Los Angeles, Tufts College Medical School Boston 1909 aged 53 died August 6

Richard C Huntington, Enid Okla. Chicago Physio Medical Institute, 1889, aged 71 died July 19

Peter J Brown, Toronto, Ont Canada, Trinity Medical College, Toronto 1889, died August 10

W W Richmond Prestonsburg Ky Louisville Medical College 1897 aged 63 died July 28

Francis J W Cook, Toledo Ohio, Toledo Medical College 1904 aged 59, died August 1

Bureau of Investigation

THE SHOW MUST GO ON

How an Eminent Comedian Survived Gas Pains by Using Van-Tage

Cinema addicts will rejoice that a great tragedy of the American theatre (theatre to you) has happily been averted. Mr Robert Woolsey "of the famous Wheeler and Woolsey team" has just broken down and confessed in an "unsolicited" three-column advertisement for the package medicine "Van-Tage" that he often thought he would have "to quit pictures and retire." "Only a few people have known about it," but Mr Woolsey suffered from "a gaseous stomach disorder and sluggish bowel complications." My food set up a gaseous disturbance in my stomach, causing gas cramps and pains.

Which just goes to show how seldom an audience realizes the tragedies behind the Pagliacci of the silver screen. Those

I get the full good out of my food and have more strength for my Movie Work. "Imagination fails when we try to visualize the Woolsey comedy after three bottles of Van-Tage.

It is a shame Mr Mosby did not know of actor Woolsey's gaseous stomach before, because Mr Mosby was the originator of another notable discovery, 'Indo-Vin,' which a few years back, was "banishing poisons that foster stomach troubles."

And, Mr Woolsey, if Mr Mosby had given you a shot of his "Konjola," which had thirty-two ingredients, we tremble to think what contortions you might have achieved. Alas Mr Mosby isn't plugging Konjola any more although in 1930 he was enthusiastic over it and flooded the newspapers with testimonials. A testimonial from a Mr A R Sheckler appeared in an eastern newspaper on August 20, 1929 stating "Another victory for Konjola in a seemingly hopeless case after all the others failed." The only thing that was wrong with this, Mr Woolsey, was that the unfortunate fellow died three weeks before the testimonial appeared.

So far as we are able to learn, Mr Mosby has never claimed to be a pharmacist, chemist or physician. Yet, by some esoteric process he is able to conjure up a shotgun cure-all every so often. Konjola was reported to contain

Caramel	Sarsaparilla Root	Angelica Root
Cascara Sagrada Bark	Yellow Dock Root	Boneset Leaves and
Glycerin	Senna Leaves	Tops
Gentian Root	Black Cohosh Root	Potassium Iodide
Queen Meadow Root	Oil of Sweet Orange	Blue Cohosh Root
Pipsissewa Herb	Wild Ginger Root	Colden Seal
Calangal Root	Burdock Root	Spikenard Root
Salicylic Acid	Pink Root	Aletris Root
Poplar Bark	Sodium Benzoate	Lady Slipper Root
Pepsin (Fluffy)	Senega Root	

Some time ago the A M A Chemical Laboratory made some cursory tests of Van-Tage, and it appeared from these that the essential drugs in it were laxatives and iodides.

We all rejoice in your remarkable recovery, Mr Woolsey, and we feel mean for ever having criticized your comedy. But how were we to know it was gas pains?

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product (2) the name of the manufacturer shipper or consigner, (3) the composition, (4) the type of nostrum (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Syn O Scope and Synex—Syn O Scope Laboratories Los Angeles Composition Synex consisted essentially of volatile oils including eucalyptus a trace of an alkaloid alcohol (20 per cent) and water (the Syn O Scope was the accompanying device) For sinus troubles hay fever asthma etc. Fraudulent therapeutic claims—[N J 2294 May 1935]

Bullock's Husk Dressing—Bullock Walker Mfg Co South Orange N J Composition Essentially calomel (53 3/4 per cent) zinc oxide (37 1/2 per cent) bismuth subnitrate (141 per cent) aluminum sulfate (01 per cent) and phenolic substances including roborin and salicylic acid (a trace) in an ointment base For syphilis hemorrhoids ulcers cancer boils etc. Fraudulent therapeutic claims—[N J 2297 May 1935]

Woolford's Sanitary Lotion—Kells Co Newburgh N Y Composition Calcium sulfide (18 per cent) and sulfur (25 per cent) and water For mange and other skin disorders Misbranded because falsely labeled Sodium Chloride 64 Per Cent whereas it contained no sodium chloride (common salt) Fraudulent therapeutic claims—[N J 2328 May 1935]

Mentholated Chest Rub—Hance Bros & White Inc Philadelphia Composition Essential oils including menthol camphor and eucalyptol in petrolatum For sore throat coughs tonsillitis asthma muscular rheumatism etc. Fraudulent therapeutic claims—[N J 2398 Mar 1935]

Brumfield's Asthma and Cough Remedy—J P Brumfield Galena Kan Composition Essentially chloroform an antimony compound a fatty oil alcohol glycerin gum sugar and water Fraudulent therapeutic claims—[N J 2392 May 1935]

ROBERT WOOLSEY

Of the Famous Wheeler & Woolsey
Team of Hollywood Screen Stars

Tells What

VAN-TAGE

Did for Him!

UNSOLICITED!

This is an Unsolicited Testimonial, Given Freely to the Makers of Van-Tage, Without Any Payment of Any Kind Being Made Therefor.

Robert Woolsey of the Famous Wheeler & Woolsey Team of Hollywood Screen Stars is the latest Prominent American to publicly endorse VAN-TAGE.

This is the "Amazing New Medicine" for Ulcer Stomach, Irritable Bowels, Liver Bile Congestion, and Stagnant Kidneys, which has gained such Spectacular Success in the past few months, with sales of Hundreds of Thousands of Bottles its first year in The West.

It is now being introduced to large crowds daily here by Special Van-Tage Representatives, direct from The Van-Tage Laboratories, in LOS ANGELES at THRIFTY Drug Store, 541 S. Broadway in HOLLYWOOD at THRIFTY Drug Store Santa Monica and Western in PASADENA at THRIFTY Drug Store, Colorado and Euclid and in LONG BEACH at THRIFTY Drug Store 4th and Pine.

At Hollywood, Capital of the Motion Picture World, Van-Tage is a Sensation. This medicine is made here. The Immense Van-Tage Laboratories are located at Hollywood. So the Stars of the Screen are intimately acquainted with this Great Compound and



grimaces of Mr Woolsey's which we mistook for comedy gestures were, in reality, gas pains. I went for days without any food at all. Going without food is not unknown to many thespians. Bob Burns of "bazooka" fame freely admits missing a meal during his vaudeville days. But Mr Woolsey suffered in silence, preserving the age old tradition of the theatre, "The show must go on." They did not know of his Daily Struggle!

Now, however the Shadow has been removed. The Daily Struggle has come to an end. So the story can be told. It's hard work in the movies.

So, from the start, I found pictures a severe physical strain. Sometimes I felt so weak I could hardly get to the studio. I guess

"Something saw me through—sheer will power, Poor Mr Woolsey!

Sitting in the lap of Hollywood luxury, turning out smash hit after smash hit and about to give up the drama (drama this time!) But then came the dawn. Mr Woolsey was introduced to a Mr Gilbert H Mosby, "owner of a Medical Compound." And—but let Mr Woolsey tell us in his own words. "I was amazed to discover that this medicine was what I had needed all the time. I have taken 3 bottles of Mr Mosby's Van Tage

Now And

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

TRYPARSAMIDE AND OPTIC ATROPHY— TREATMENT OF SYPHILIS

To the Editor—H C a widower aged 37 came to my office complaining of difficulty in starting the urinary stream. Fifteen years ago he had gonorrhea but never noted a sore. The gonorrhea was apparently cured. Six years ago he married and he has a son 5 years of age apparently normal. Two years ago his wife died of a ruptured appendix. The difficulty in starting the stream started ten years ago and for the past year has been worse. He has noted a change in gait e. g. it is slightly different from ever before. He never had a rash. His weight is about 185 pounds (84 Kg). The eyes do not react to light but react to accommodation. The eye grounds show a clear cut view of the disk, sharply outlined. The Romberg test discloses slight swaying but no loss of balance with an accompanying dizzy feeling (heel and toe together and eyes closed). The knee jerks are absent. The genitalia are normal. Rectum examination discloses the prostate moderately enlarged baggy and markedly tender with loss of contour and no palpable vesicles. A prostatic smear was loaded with pus and clumps. Passage of a bougie did not disclose a stricture. A No. 22 F steel sound passed with ease. Cysto-urethroscopy revealed the bladder mucosa and orifice normal. In the posterior lateral dome of the bladder was a fine trabecular like area of about 5 cm diameter. The trigon is slightly injected. The vesical neck shows no irregularity or encroachment of prostate. There is no basal fold. The posterior urethra is covered with a gray white plastic exudate. The prostatic gland orifices appear markedly golf cupped. The vein is markedly enlarged irregular and boggy and bleeds readily. The blood Wassermann reaction was 3 plus and 4 plus. The spinal Wassermann reaction was positive (degree not known). The fluid clear and limpid. The colloidal gold test was 5433200000. The diagnosis is (1) tabetic dementia paralytica with vesical involvement and possibly optic nerve involvement (2) chronic prostatovesiculitis and urethritis. The plan of treatment adopted was that the patient should receive prostatic massage two times a week and later posterior instillations once a week with silver nitrate from 0.5 to 1 per cent. He has received iodides by mouth as much as 50 grains (3.25 Gm) each day with intervals of rest to obviate toxic results. He has received sodium iodobismuthite 2 cc twice a week for ten doses. He is to get for two weeks twice a week a mercurial solution 1 grain (0.06 Gm) followed by tryparsamide 0.2 Gm for first dose and then 0.3 Gm once a week interspersed with mercurial solution 1 grain for from ten to fifteen courses. Before the tryparsamide injections are started he will be seen by an eye physician and one week after the injections for eight visits to obviate a toxic effect on optic nerve. Between courses I intend to continue with the bismuth compound for from six to eight weeks as described. After each course I intend to take a spinal and blood Wassermann test. Should this fail I will then proceed with malarial treatment. Since I began treatment he has felt more 'peppy' and sharp but his vesical difficulty is still present. No definite changes of sight have been elicited before or since treatment and there has been no history of loss of sight acuity at any time. Have you any suggestions to improve this scheme of treatment? Should it be found that tryparsamide cannot be used what course should I take? Is this scheme adequate? Kindly omit name. M.D. New York.

ANSWER—So far as the syphilologic aspect of the case is concerned, the information furnished is inadequate so far as spinal fluid data and diagnosis of a possible primary optic atrophy are concerned. So long as physicians use the phrase or are willing to content themselves with spinal fluid Wassermann, clinical laboratories will not supply the necessary information for the interpretation of a patient's neurosyphilis from the serologic standpoint. An adequate diagnosis by competent ophthalmologists of the condition of this patient's optic nerves is absolutely necessary to treatment decision here. In discussing his plan of treatment the questioner evidently fears toxic results from a daily 50 grain dose of iodide by mouth—a fear which in general is unjustified. He does not state what type of mercurial solution he intends to employ, plans to begin tryparsamide without adequate ophthalmologic control and speaks of from ten to fifteen courses of tryparsamide and the mercury preparation without specifications as to the length of each course. The dosage of tryparsamide as given in the inquiry is either a typographical error or a complete miscomprehension of the standard dosage for this drug which ranges from 1 to 3 Gm. instead of from 0.2 to 0.3 Gm. Not knowing the length of the tryparsamide course or the number of mercurial injections intended it is rather difficult to judge whether or not this patient will have the opportunity to eliminate accumulated heavy metal either mercury or bismuth, while he is following this regimen. So far as one can judge the intention is to make heavy metal treatment continuous over a long period which would in all probability lead to serious accumulation and toxic effect.

Tryparsamide should not be employed if, before treatment is begun, there is definite objective evidence of primary optic atrophy. Significant changes in the optic nerve likely to contraindicate the use of tryparsamide are more frequent in the taboparetic syndrome than in the preparetic states as such. Accordingly, special caution should be used in interpreting even slightly abnormal eye conditions. For the proper examination of these eyes, perimetric tests of the visual fields not rough tests, are essential, and the visual acuity, changes in the blind spots and scotomas should be specially studied. If absolutely no abnormalities appear, the patient may be given his first injection of tryparsamide, 1 Gm, to be followed in two or three days by field and visual acuity tests. The tryparsamide injection may be repeated in a dosage of from 2 to 2.5 Gm. on successive weeks, each injection being followed by repetition of the ophthalmologic examination. If the slightest abnormalities appear, the treatment should at once be discontinued. Heavy metal therapy may be employed as a preliminary (preferably with a bismuth compound), one course of from six to ten injections, the subsalicylate being used at weekly intervals. Apparently the inquirer plans to use something approximating the original technic of Lorenz and Loewenhardt, which combined the administration of mercuric salicylate intramuscularly with that of tryparsamide in broken courses, usually of ten injections each, with rest intervals of from four to eight weeks between courses. This method has been supported by subsequent reports of a favorable nature, but it has been departed from by observers of large experience such as Solomon and Bunker, both of whom have given tryparsamide over periods ranging from one to eight years with injection intervals of one week during the first year or two and longer intervals subsequently. While one cannot infer from the inquiry just how soon the inquirer intends to reexamine the patient's spinal fluid, it may be said that on tryparsamide therapy not much less than a year should elapse before an effort is made to draw a definite conclusion as to serologic results.

If the use of tryparsamide proves to be contraindicated either by preliminary examination or by ophthalmologic examinations repeated weekly during the first eight or ten injections of the drug it would be advisable to consider either intraspinal therapy by the unmodified Swift-Ellis technic or some form of fever therapy. Moore, who has been the most vigorous advocate of intraspinal therapy rates it superior to fever therapy. The method is an inconvenient and now relatively less accessible one for many patients. It should be emphasized that it is probably more effective in controlling the optic atrophy than in putting a stop to the progress of the tabetic dementia paralytica as a whole. The considerations that would enable one to judge of the patient's fitness for one or the other form of pyrexial treatment are not given by the inquirer (the cardiovascular condition and so on) but it may be remarked that malarial therapy is not usually well tolerated by patients carrying bladder infections, which may give rise to an ascending pyelitis and pyelonephritis. In place of malaria the use of typhoid vaccine either as the H antigen or the unchanged vaccine, in divided doses according to the technic of Nelson is an easily controllable method, giving satisfactory immediate results but still under investigation as to the permanence of the effects obtained. Physical methods of inducing fever may be specially available for this patient and their controllability (especially the Kettering hypertherm) may make them preferable to malaria. On the other hand, if the patient is of an age and in a general condition fit to take malaria without material risk it can still safely be rated as the most effective all around measure against this type of neurosyphilis.

It should be clearly realized both by the inquirer and by his patient that if a primary optic atrophy exists it may progress in spite of any form of treatment employed and it may seem to be arrested likewise by almost any form of treatment employed except tryparsamide. This drug may be regarded as positively contraindicated if any sign of primary optic atrophy can be identified. The same is true of acetarsone.

EFFECTS OF LIQUID PETROLATUM ON VITAMIN A

To the Editor—Please give me references to articles discussing the lower ability of the body to utilize vitamin A when mineral oil is administered.

MIRIAM ZELLER GROSS Newark N. J.

ANSWER—As brought out in the editorial in THE JOURNAL Aug. 27, 1927, page 694, it is important when considering the effect of liquid petrolatum on the absorption of vitamin A to distinguish between the actual vitamin and provitamin A such as carotene. The deleterious effect of liquid petrolatum on the absorption of provitamin A has been reported by several investigators. Thus Jennie I. Rowntree (The Effect of the Use of

Mineral Oil upon the Absorption of Vitamin A, *J Nutrition* 3 345 [Jan.] 1931) verified the earlier report by Dutcher that liquid petrolatum interferes with the absorption of vitamin A from the intestinal tract of animals, and the effect appears to be dependent on the amount of vitamin A in the diet. Richard W. Jackson (The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat-Soluble Vitamins. I. Studies with the Vitamin A of Butter Fat, *J Nutrition* 4 171 [July] 1931) showed that liquid petrolatum caused a considerable loss of vitamin A to the animal organism if the liquid petrolatum was mixed with the vitamin A (in the form of butter fat) prior to ingestion but not if the liquid petrolatum was administered separately from the butter fat. In later work Jackson (Effect of Mineral Oil Administration upon Nutritional Economy of Fat Soluble Vitamins. Studies with Vitamin A Factor of Yellow Corn, *J Nutrition* 7 607 [June] 1934, Effect of Mineral Oil Administration upon Nutritional Economy of Fat Soluble Vitamins. Studies with Vitamin D of Irradiated Ergosterol, *ibid* 7 617 [June] 1934) showed that the deleterious effect of the liquid petrolatum is greater with the vitamin A factor of yellow corn than with vitamin A obtained from animal sources. Dutcher, Harris Hartzler and Guerrant (The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil, *J Nutrition* 8 269 [Sept.] 1934) bring out the interesting fact that liquid petrolatum interferes with the absorption of carotene, which makes up the bulk of vitamin A of vegetable sources, but has a less marked detrimental influence on the absorption of vitamin A such as makes up most of the vitamin A potency of butter fat or cod liver oil. The two articles by Jackson in June 1934 also demonstrate this fact.

In general, therefore, it may be stated that in the amounts usually prescribed and under the conditions in which it is taken, the effect of liquid petrolatum on the absorption of vitamin A of the human diet would probably be negligible. On the other hand, experimental evidence shows clearly that petrolatum is a poor vehicle for vitamin A, particularly provitamin A, such as carotene, and that its use is not to be recommended.

HIGH ACIDITY OF URINE

To the Editor—What is the significance of a highly acid urine (over 40 degrees a degree being equivalent of 1 cc. of tenth normal acid per hundred cubic centimeters of urine) in adults? What conditions besides overconsumption of acid ash foods produce highly acid urines in adults? Has it definitely been proved to have any relation to the reaction of the blood or the reaction of the tissues? Are there any conditions for which the production of an alkaline urine is beneficial? Is it advisable through the use of diet (or diet and the administration of soda) to regulate the urine to a normal range of acidity or to a point of alkalinity? Please omit name.

N. D. Washington

ANSWER—The normal urine is acid when the entire twenty-four hour specimen of a person on a mixed diet is tested. This reaction is due to the presence of different acid and basic constituents but mostly depends on the relative amounts of mono-basic and dibasic sodium and potassium phosphates. The acidity runs quite parallel with the hydrogen ion concentration. The normal range of pH value is from 5.0 to 8.0, the average being around 6.0.

The kidneys assist the lungs in maintaining the neutrality and alkali reserve or buffer power of the blood. The total acid secreted daily by the kidneys is equivalent to from 200 to 500 cc. of tenth normal acid, or from 200 to 500 units. This acidity is due largely to acid phosphates and to a minor extent to organic acids.

Many foods yield acid end products in metabolism. The sulfur of proteins and the phosphorus of lecithin are changed into acids. Vegetable and fruit acids undergo oxidation and give rise to alkaline carbonates. It is therefore obvious that the diet is one of the most important factors in affecting the reaction of the urine.

The reaction of the urine varies during the day. The acidity is usually highest in the morning before breakfast and diminishes after a meal. Two or three hours after a meal the urine may even become alkaline, because of temporary absorption of the acid by the food in the stomach. The alkalinity may render the urine turbid from the precipitation of phosphates. This temporary change in reaction of the urine has been called the alkaline tide. An exclusive protein diet causes an increase of acidity, such an increase is seen also in conditions of acidosis, in some infectious diseases, after excessive exercise, and hot baths with free perspiration. After ingestion of large amounts of vegetables or fruits or alkaline waters there is a decreased acidity or alkalinity. It is generally advisable to regulate the diet to keep the urine within a normal range of acidity.

On a normal diet a total acidity of over 500 units in twenty-four hours indicates a tendency toward acidosis, and a total

under 100 units a tendency toward alkalosis. In many pathologic conditions, changes in the urinary reaction are found. The amount of acid secretion by the stomach, absorption of transudates or exudates, vomiting, acute infectious diseases, pyelitis and cystitis, as well as the diet, may influence the reaction of the urine. An alkaline urine is often found with bacterial infections of the urinary tract, often accompanied by pyuria. In such cases the use of sodium acid phosphate or ammonium chloride to render the urine acid for several days may be of value.

The study of the acidity of the urine is an aid in following the effects of dietary or drug treatment in the estimation of the alkali reserve, and in the treatment of urinary infections.

The artificial alteration of urinary reaction may be effected by various drugs. Mineral acids will increase the acidity, but their usefulness is limited. Sodium biphosphate and ammonium and calcium chloride are most often used. Bicarbonates, citrates and acetates are employed to reduce the acidity or to increase the alkalinity of the urine.

The production of an alkaline urine is beneficial in lithuria with a high uric acid content of the urine, and in cystinuria. An acid urine is of value in oxaluria because it increases the solubility of oxalates, and also in phosphaturia. Normally the kidneys secrete from 1 to 5 Gm. of phosphoric acid in the form of phosphates. At times the amount rises or the phosphates are precipitated by a change in reaction. In phosphaturia the urine is usually alkaline and cloudy when voided. The treatment should remove any infection present, lower the intake of calcium, and render the urine acid with acid sodium phosphate. The fluid intake should be increased.

POLYP COMPLICATING PREGNANCY

To the Editor—A few months ago a woman came to me for advice on account of having bleeding from the vagina. The patient was a multipara and was in her eighth month of pregnancy. She did not have any bleeding up to a few days after she was due in her eighth month. Examination revealed a small polyp at the cervix of the uterus. The polyp had a pedicle about an inch long which could be felt by the finger but could not be seen because the body of the polyp will not allow the pedicle to be seen. The patient was put on observation and meanwhile the literature at hand was looked up. De Lee and Williams in their respective books on obstetrics do not explain how to handle such cases and the patient was observed until labor. She kept doing well with the slight bleeding (it was necessary to use one or two napkins) every four or five days until one day just before labor set in she lost about 150 Gm. of blood. An examination made while she was bleeding showed that bleeding came from one surface of the polyp. It stopped almost immediately with pressure made with gauze while I was looking through the vaginal speculum. The day after this bleeding labor pains set in and a child weighing 9 pounds 4 ounces (4200 Gm.) was born six hours after the pain had started. Convalescence was uneventful and at present she is getting ready to be operated on for the polyp. This happened a few months ago. Now another patient has come to me. She is a primipara in good health well built 28 years old has been married for two years and missed her monthly period. A few days afterward she started to bleed slightly through the vagina. At first she thought that menstruation was going to set in but time went by her abdomen was getting large and bleeding persisted. Almost every morning she notices a small clot of blood which comes down through the vagina. Examination of the patient shows that she is normal in every respect (pelvic measurements blood pressure heart) except that a small bleeding polyp was found in the cervix. This polyp is almost exactly the same as the one in the other case. It is small and red and has a pedicle that can be felt by the finger but not seen by the eyes because the body of the polyp does not allow the pedicle to be seen. The question for me and the one for which I inquire is: Shall this patient be allowed to go on to term with the polyp to be operated on after delivery or shall the polyp be operated on now and the risk taken of starting up an infection in order to stop a slight bleeding or to prevent a larger bleeding later on? Please omit name.

M. D. Puerto Rico

ANSWER—A few years ago Heidler (*Arch f Gynak* 121 429 1924) reported a death which occurred after delivery and which he attributed to the removal of a cervical polyp six weeks before delivery. Necropsy revealed a small purulent hematoma at the site from which the polyp had been removed and the vessels around this area showed septic thrombi. Heidler believed that these pathologic conditions developed soon after removal of the polyp and that this infection was a latent one but was actuated by the vaginal manipulations and instrumental delivery the patient had. This author therefore strongly counseled against any manipulation of the cervix during pregnancy. On the other hand, there have been reports of large series of cases in which the electric cautery was used during pregnancy for cervical erosions and other conditions and in which, in spite of this treatment, miscarriages or other complications were not observed.

Cervical polyps often become infected. Furthermore, in pregnancy particularly, the blood which accumulates in the vagina

from a polyp may give rise to infection. Likewise, the trauma of labor may bruise the polyp and an infection may follow. Hence in the case cited it is probably best to remove the polyp by twisting the pedicle with a long curved clamp and then cauterize the base of the pedicle with an electric cautery. Such treatment has been carried out without any untoward results.

BRONCHIAL ASTHMA WITH INFECTION OF UPPER RESPIRATORY TRACT

To the Editor—My husband Dr. S. wishes me to write to you with regard to our 7 year old son. He has had asthma since he was 2 and gets it only during the winter months after he has first contracted a cold. He is desperately ill with it for about thirty six hours and then is better until he has another cold his resistance becoming lower as the winter progresses. He has already had one attack. He often develops ear and gland trouble as well. We should like to take him to another climate for the winter in the hope that he may escape these attacks and that he will outgrow it eventually. My question is this: What locality in the United States would probably be most favorable for him? Do you think the warm climate of Florida would be best in spite of its dampness or would Arizona's drier climate with its cold nights be more likely to agree with this condition? Or are there even better places to go than these two? Any suggestions you have to offer will be very much appreciated.

— Michigan

ANSWER—The symptoms given would indicate that the boy has a bronchial asthma which is aggravated by infection of the upper respiratory tract. It is obvious of course that the colds are only contributory factors, even though very important. Basically the child has a tendency toward asthma otherwise the spells would not occur. It is important therefore to find out to what the child is sensitive besides the fact that he contracts these colds. No mention is made of an examination from an allergic point of view and certainly the patient should have the benefit of a thorough examination followed by complete protein sensitization tests.

These tests should be carried out by the cutaneous or scratch method at first, followed by intradermal tests if necessary. All this should be done before a change of climate is considered.

On the other hand if these tests have all been carried out and carried out thoroughly, preferably by one who is experienced in making such tests, and if no benefit has been derived from this examination and treatment based on the results of such an examination the question of change of climate may well be taken up. There is no one locality which is favorable to all asthmatic patients; some do well in Colorado, some in California, some in Florida, and probably the greatest benefit is derived by those who visit Arizona.

It should be emphasized that change of climate should not be carried out until a thorough search for the cause of trouble has been instituted.

HYPERTENSION IN PREGNANCY

To the Editor—Would you be kind enough to give your opinion of the following case. The woman is now 30 years of age. Five years ago she went through a pregnancy complicated by hypertension. The systolic pressure was from 180 to 210. The urine was consistently normal. There were no complaints and no edema. The eye grounds were normal. Physical examination was negative. She delivered a normal baby at term. The baby subsequently died of a respiratory infection. The blood pressure was already elevated when the patient was first seen by the doctor. It remained elevated post partum. Chemical examination of the blood was reported negative. The Wassermann reaction was negative. Subsequently the blood pressure remained high. The urine always was normal. The patient is now two months pregnant. The blood pressure is 230 systolic, 110 diastolic. The urine is normal. There are no complaints and no other abnormalities. Would you allow such a pregnancy to continue? What treatment would you institute if pregnancy is to continue? Kindly omit name.

MD New York

ANSWER—The patient apparently has an essential or primary hypertension. In view of her present blood pressure when only two months pregnant the probabilities are that if the pregnancy is permitted to continue the blood pressure will slowly increase and in the last trimester albumin will begin to appear in the urine. The baby will probably die in utero as a result of placental infarction or abruptio placentae perhaps even before it is viable.

While in rare instances such patients go to term or near it happily it is extremely unlikely that this one will give birth to a living child. If interruption of pregnancy is refused the patient should be placed on a balanced general diet which is salt poor and advised to spend a great part of the day in bed. Later on in pregnancy she should remain in bed constantly and phenobarbital may be given as a sedative. Interruption would be indicated to spare the kidneys and heart at thirty-two to thirty-four weeks if the fetus should still be alive at that time.

TIN PANS AND FOOD POISONING

To the Editor—We have recently had a rather widespread gastrointestinal disturbance thought to be due to food served here at the institution. At this meal we served ground meats. Some of this meat was kept for twenty-four hours in aluminum containers and some of it was kept in tin pans under proper refrigeration and it appeared that those served the meat that had been kept in the tin pans were the ones who had the intestinal disturbance. When the ground meat was prepared pickles, vinegar and hard boiled eggs were mixed with the meat after which this mixture was kept in the tin pans for about three hours when it was used for sandwiches. Will you please advise whether you think that the use of the tin pans could have been responsible for the gastro-intestinal disturbance.

J. D. RILEY, MD, State Sanatorium, Ark.

ANSWER—This query is quite involved. In response to the direct query as to whether the tin pans would be responsible for the gastro-intestinal disturbances, the only answer possible is that this is most unlikely. In reconstructing such an outbreak from the meager information available one would think that somewhere in the preparation or handling of the meat it became contaminated with certain bacteria, either through human or other animal sources. Moreover, whatever the contaminating bacterial organisms may have been, opportunity for them to grow and produce a bacterial poison in sufficient amounts to cause the gastro-intestinal disturbance mentioned must have been present.

This of course assumes that the clinical picture was that of the ordinary food poisoning outbreak, namely, nausea, vomiting, abdominal pain and diarrhea appearing usually from three to six hours after consumption of the causative food and that the chemical analysis of the food was entirely negative.

The clinical picture, if chemicals were involved, however, might have been similar but the incubation period would have been almost immediate. It is, indeed, unfortunate that no bacteriologic examination was made of the suspected food. In retrospect therefore, this outbreak may have been due to the fact that the food was contaminated somewhere during its preparation, either through the source of a human carrier or from some other animal source the bacterial organism being one of the group ordinarily associated with outbreaks of food poisoning in man.

Certainly the reference to tin pans could be entirely eliminated as a direct factor for it is further assumed that the pans mentioned were properly cleansed before being used.

FRÖHLICH'S SYNDROME AND OBESITY

To the Editor—A girl aged 14 years weighing 185 pounds (84 Kg.) was brought to me to help her reduce. Her blood pressure was 110 systolic, 80 diastolic, pulse 80 and her basal metabolic rate —35. The urine was normal, menstruation was normal and she did not have headaches, dizziness or tiredness. I put her on thyroid 2 grains (0.13 Gm.) a day and increased it to 6 grains (0.4 Gm.) a day and once a week gave her anterior pituitary 2 cc. for about four weeks. At the end of five months she lost 15 pounds (7 Kg.) and her basal metabolic rate was —16. The blood pressure was 120/80 but her pulse went up to 120 per minute. When medication was discontinued her weight again went up to 183 pounds (83 Kg.). The distribution of fat is that of Fröhllich's syndrome. Advice as to the treatment will be appreciated. Please omit name.

MD Ohio

ANSWER—The problem resolves itself into two distinct phases: the treatment of Fröhllich's syndrome proper and the treatment of the obesity.

The present status of the treatment of Fröhllich's syndrome is unsatisfactory. Thyroid and/or various pituitary preparations have been used with varying results. For a recent review of this subject see chapters VIII and XIV of *Glandular Physiology and Therapy*, published by the American Medical Association, Chicago, 1935. Fortunately most cases of Fröhllich's syndrome probably undergo spontaneous regression at adolescence. The simple correction of the obesity, by whatever means has seemed almost as effective a treatment of Fröhllich's syndrome as any.

As regards the treatment of the obesity in this case the low basal metabolic rates justify the use of thyroid. However the amount of thyroid prescribed should be governed by the appearance of symptoms of overdose rather than by the desired rate of loss in weight. It is also well to consider the possibility that the basal metabolic rate of —16 (after intensive thyroid medication and at the time when both blood pressure and pulse rate were raised) may actually represent a normal or supernormal metabolic rate for this patient. A recalculation of that metabolism test on the basis of ideal weight rather than actual weight (active tissue plus much inert fat) would give a fairer estimate of the state of affairs.

Loss or gain in body weight is determined by the balance between the caloric expenditure in the form of muscular work

and heat and so on and the caloric intake in the form of food. The suggested treatment, therefore, is to adjust the thyroid medication in accordance with the principles outlined, and then prescribe a diet with a caloric value less than the energy expenditure under those conditions.

AMYOTONIA CONGENITA

To the Editor—At present I have under my care a 5 weeks old female infant with amyotonia congenita. This child was apparently normal at birth but has rapidly developed the characteristic signs of this disease within the past ten days so that at present there is atrophy of the left deltoid muscle and the lower extremities are becoming involved. This is the third consecutive child born of the same parents within seven years. Each of the other two infants died of amyotonia. Two years ago the mother had one spontaneous abortion. The blood Wassermann reaction on both parents was negative. During this last pregnancy the mother received weekly injections of a derivative of physostigmine and in the last ten days the baby was likewise injected with this drug without any resulting improvement. Both other babies were studied histopathologically and a full report on the first case was published in the *American Journal of Diseases of Children* (41: 591 [March] 1931). In both other babies the blood calcium, blood phosphorus and blood cholesterol were elevated. There were also a terminal hyperemia and edema of the brain. Briefly the pathologic condition consisted of an absence of anterior horn cells of the cord with a progressing degeneration of the few anterior horn cells left. I should like to know (1) whether there is any newly discovered treatment for this condition and (2) whether high voltage roentgen therapy over the spine will prove efficacious. Because of the rapidly fatal course of this disease I should greatly appreciate a prompt reply. Kindly omit name.

M D New York

ANSWER—1 Hurwitz and Gerstle (Amyotonia Congenita with Familial Incidence *Arch Neurol & Psychiat* 33: 1317 [June] 1935) suggest the use of ammoniac acid over long periods. Three months of treatment in their case did not change the neurologic status. Other drugs such as ephedrine, physostigmine and its derivative are being used also without encouraging results. In view of the paucity of the anterior horn cells and the atrophy of those present when seen at necropsy, any drug therapy would appear to be of doubtful value.

2. No reports are known of the effects of high voltage roentgen therapy.

DEATH FOLLOWING INTRAVENOUS IODIDE

To the Editor—Is it advisable to give a patient having angina pectoris with electrocardiogram tracings showing damage to the heart muscle an intravenous injection of sodium iodide 30 grains (2 Gm.)? This was done and within forty-eight hours the cardiac condition became worse, decompensation occurred and despite all efforts the patient died. Does the sodium iodide given in dosage as mentioned have an absorbent or solvent action on the scar tissue previously laid down by former attacks of probably minor occlusion of minor vessels? What is your opinion of the intravenous use of iodide for conditions other than syphilis? Please omit name.

M D California

ANSWER—As death is liable to occur at just this time after an attack of coronary thrombosis and in just this manner when iodide is not given it is impossible to say that the iodide has been the cause of the fatality, however intravenous iodide may cause pulmonary edema in some persons and hence may have been a contributory factor in the fatality. It should be definitely understood, however, that iodide is not indicated at this time. Iodide given intravenously may have alternative value in other conditions besides syphilis but it is difficult to define these indications precisely. With quite a number of astute practitioners it is the practice to "give iodide when in doubt" and sometimes good results are obtained in this manner but as iodides are so well absorbed from the gastro-intestinal tract there seems to be little reason for giving them by vein.

CONGENITAL MYOTONIA

To the Editor—I recently saw a 2 year old girl with a typical case of congenital myotonia (Oppenheim's disease). The standard textbooks give little information about the disease and I would appreciate your opinion as to the pathology, treatment and prognosis. Please omit name.

M D New York

ANSWER—Fairly adequate descriptions of amyotonia (myotonia) congenita are found in the newer textbooks of neurology and pediatrics. The article in Grinker's Neurology is particularly good. Many exhaustive articles have appeared in neurologic journals. The pathology is discussed at some length by R. R. Grinker (*The Pathology of Amyotonia Congenita Arch Neurol & Psychiat* 18: 982 [Dec.] 1927) and by E. S. Gurdjian (*Myotonia Congenita ibid* 24: 52 [July] 1930). Both articles are well illustrated and contain clinical and anatomic descriptions. The disease exists at birth. The chief feature is extreme hypotonia, so that the legs may actually be wrapped around

the neck. The weakness is profound. The tendon reflexes are absent or very weak. The change in the nervous system consists of scarcity in the anterior horn cells. There is no inflammatory reaction. The striped muscle fibers are abnormally small. The smooth muscles are not involved. There is a tendency to gradual improvement, but some degree of hypotonia usually persists. No specific treatment is known. The disease often closely resembles the Werdnig-Hoffmann type of muscular atrophy. This disease does not exist at birth but develops during the first few years of life and is more severe and progressive with early death. The alterations in the nervous system are more profound.

PERIPHERAL NEURITIS AND CHROME COMPOUNDS

To the Editor—A young woman has developed a peripheral neuritis of both the upper and the lower extremities following an alleged mild head cold. One of her duties is to wash blueprints as needed an hour or so daily. The prints are soaked (in a well ventilated room) in potassium bichromate (1 drachm to 5 gallons) lifted automatically out of this solution to drain off and then placed in a cold water bath and dried. Physical examination is essentially negative. She has a rather flushed face, congested throat and pyorrhea around a decayed tooth. Could this work be responsible for her condition? M D Connecticut

ANSWER—Potassium bichromate as used in the trade specified is frequently the cause of 'chrome holes' in the skin and chrome dermatitis, occasionally a perforated nasal septum may be encountered. Chrome vapors conceivably might lead to the acceleration of infectious processes about the gums and respiratory tract. However the direct association of a peripheral neuritis with potassium bichromate in limited exposure is scarcely warranted. Occasionally workers become sensitized to chrome compounds so that the quantity of damage resulting is far out of proportion to that expectable from trivial exposure. Sensitization to chrome is discussed by Adelaide R. Smith (*Chrome Poisoning with Reference to Manifestations of Sensitization THE JOURNAL*, July 11, 1931 p. 95). In the case described mention is made not only of skin lesions but also of asthma, nephritis, glycosuria, myositis and fever. These manifestations occurred on reexposure. *Occupation and Health* of the International Labor Office, specifies in discussing chromates. In the case of the mouth chromates may cause irritations, small yellowish ulcerations which heal slowly, and a type of pharyngitis regarded as characteristic. Further, the statement is made that most experts admit that chromates exercise a local effect and that a general effect is scarcely likely. In the absence of a proved sensitization to chrome compounds and in the absence of obvious local evidences of injury it is doubtful whether the peripheral neuritis mentioned in the query can be traced to chrome as the cause.

URETHRORECTAL FISTULA

To the Editor—A man aged 23 has a chronic stricture of the urethra which because of neglect has resulted in being complicated with two fistulas. One is at the junction of the urethra and the scrotum the other is inside the rectum. When urine is passed it comes out mostly through the rectum and the lower opening. There is some passed through the distal opening with only a small amount coming through the urethral opening. I opened an abscess about two weeks ago which resulted in the stricture above. What procedure would you recommend to close these openings? I am now using hydrogen peroxide injections. I have the stricture opened fairly well to and beyond the first opening but there is still some discharge from this fistula. I have used other medicines but would prefer your advice in this matter. M D Texas

ANSWER—Urethrorectal fistula is seldom caused by stricture of the urethra alone but usually results from an abscess in the prostate. The urethroperineal fistula is probably the result of a periurethral abscess which in turn may have been secondary to stricture. Urethrorectal fistulas do not usually heal as a result of treatment of the urethra alone, and an open operation dissecting the fistulous tract and freeing the urethra is usually necessary. The chances for the anterior fistula to close following adequate dilation of the urethra and drainage are better although surgical urethrotomy may be necessary. Operation for urethral fistula of course is not possible unless the inflammation has subsided. This should be accomplished by various means such as urethral lavage and instillations of such solutions as silver salts, potassium permanganate, and other antiseptics. Local applications of heat may also be of value. If the gonococcus is present, hyperpyrexia must also be considered.

After the anterior fistula has been treated and the urethral stricture dilated urethroscopic examination may be possible to determine the relationship of the posterior fistula to the prostatic urethra. Local treatment consisting of lavage and dilation should be directed toward this area and if the fistula does not close a plastic operation may be indicated. Such opera-

tions, however, are not easy and often result in failure to close the fistula. If operation is undertaken, it would be advisable to institute preliminary suprapubic drainage in order to avoid the necessity of an inlying urethral catheter to keep the wound dry.

RADIUM TREATMENT OF CAVERNOUS ANGIOMA

To the Editor—A baby about 9 months old, was brought to me with a cavernous angioma about the size of a pigeon egg situated exactly between the inner canthi of the eyes over the nasal bone extending upward toward the glabella. Superimposed on this cavernous angioma is a naevus vasculosus. I have seen cases like it before but never in this location. Usually I have found that they respond to heavily filtered distant radium treatment. Can radium be safely used in this location with the eyes covered with lead and can my plaque, namely a 10 mg plaque be regarded as strong enough? The child has already had a few doses with apparently no effect the last dose being radium 10 mg distance 5 mm above the lesion the radium superimposed on a leaden bridge which is 0.5 mm thick with a time exposure of three hours with out effect on the birthmark. The lesion is so disfiguring to the child that something has to be done and if my technic is faulty I wish I might have your opinion. Please omit name and initials.

M D, Massachusetts

ANSWER—Generally speaking the treatment as outlined is good, though probably it does not afford sufficient irradiation. A better opinion or suggestions could be given if the doctor had given more details as to the exact size of the lesion, its elevation and also the size of the plaque (full strength?)

The average pigeon egg measures slightly more than 1 by 1½ inches. Assuming that the lesion is about 1½ inches in diameter and one-fourth inch in elevation and a full strength plaque is used, the screening is satisfactory, though 1 or 2 mm of rubber or distance might be better. The plaque is not large enough to cover a lesion of such dimensions. It might be well to divide the surface of the lesion into approximately four areas and irradiate each of these for about two hours. Overlapping of the areas should be avoided.

The treatment should be repeated at intervals of approximately six weeks until about five treatments have been given. It is well then to wait four or five months and if further treatments are indicated they may be given then.

ROLE OF PITUITARY IN LIVER FUNCTION

To the Editor—The wife of one of the members of our staff is 58 years old. During the past month the stools have been gray and though she has never developed frank jaundice the skin and the sclerae have at times a sallow muddy appearance. There is no pain abdominal tenderness or palpable evidence of tumor. There has been nausea but no vomiting. The blood sugar is consistently low between 80 and 95. Even after dextrose, 5 per cent intravenously from 400 to 500 cc twice or three times during the day there is no sugar in the urine. She has always been a heavy consumer of sweets. Since the onset of this illness she has been troubled with uncontrollable generalized itching of the skin and mucous membranes particularly in the vagina and the ear canals, which disappears when she is given large amounts of intravenous dextrose. There have been no signs of hives or allergic reaction. The blood counts and blood picture are normal. The icterus index is 14.6 the blood urea nitrogen 7.6. A malignant condition has been suspected but no evidence found. Apparently the liver is just not functioning. This might be considered a subacute hepatitis. Does the pituitary gland enter into liver function? Will you please give a recent bibliography on this subject? Please do not publish name.

M D West Virginia

ANSWER—Few references appear in the recent literature bearing directly on the control of liver function by the pituitary gland. However, a recent paper (Soskin, Samuel Mirsky, I. A. Zimmerman, L. M. and Crohn, Nathan. Influence of Hypophysectomy on Gluconeogenesis in the Normal and Depancreatized Dog, *Am J Physiol* 114 110 [Dec.] 1935) clearly shows that the hypophysis is at least one important factor in controlling the formation of blood sugar by the liver.

CALCIUM AT MENOPAUSE

To the Editor—Is there any rational basis for the use of calcium in the treatment of symptoms occurring at the menopause? Please omit name.

M D, New York

ANSWER—In the literature there are so few references to the therapeutic use of calcium for menopausal disturbances that it seems not to be considered of especial value in this respect.

Chlameric hypertension and menopausal bleeding from the uterus are two conditions in which calcium lactate or calcium gluconate might appear to be indicated. Chlameric hypertension usually responds fairly readily however to more familiar and simple methods of treatment. In the presence of menopausal bleeding disturbance in calcium metabolism with prolonged clotting time of the blood is probably one of the least likely and most remote of the several recognized causative

factors, whereas early cancer is so dangerous a possibility that it must first be rigidly sought for and excluded before one resorts to anything so uncertain in its indications and effects as calcium therapy for such bleeding.

Abraham Cantarow in his monograph on Calcium Metabolism and Calcium Therapy (Philadelphia, Lea & Febiger, 1931) makes no reference to the use of calcium in disturbances of the menopause.

INCUBATION OF MAGGOTS IN CORPSE

To the Editor—Can you give me the length of time for the incubation of maggots in a dead (human) body death having occurred during the recent warm weather? Also their relative rate of growth? The maggots in this case were from 1 to 1.5 cm in length. I am working with the county coroner on this case and will be called on to testify as to the approximate time of death. If you do not have this information I would appreciate it greatly if you could refer me to the proper source to obtain it.

H H HARRIS M D Rockwell City Iowa

ANSWER—The length of time for the development of maggots from ova on the dead human body is from twelve to twenty hours in warm weather. This time varies according to the degree of warmth the surrounding moisture and the condition of the corpse. The maggot may reach its full grown size, which is 1.5 cm long, in between twenty and twenty-four hours after incubation at 85 C in a dry bulb and at 55 C in a wet bulb. Flies are likely to deposit ova on necrotic tissue, exudate, pus and blood. In the case stated, the length of the maggots is no criterion of the approximate time of death, since ova may be deposited early or late after death, depending on whether or not flies have access to the body. Textbooks on zoology dealing with the metamorphosis of the Diptera will be found helpful.

PREGNANCY IN SYPHILIS

To the Editor—A married man the father of one child came under my observation three years ago about three days after the appearance of a chancre. The first Wassermann test was negative but the one several days later was 4 plus. I administered about thirty intravenous and intramuscular injections. No secondary symptoms appeared. No further clinically demonstrable signs of syphilis appeared within these three years. Five Wassermann tests within this period were consistently negative. One blood Wassermann test of his wife two years ago was negative. The couple is anxious for another baby and they want my advice. I had previously warned them against the possibility of transmitting the disease to the offspring. Under the existing conditions what would be the proper advice to give? Please omit name.

M D Ohio

ANSWER—A spinal fluid Wassermann test should be made of the husband and one or more blood Wassermann tests of the wife. Of course if a positive test is obtained in either intensive treatment should be instituted and no pregnancy should be initiated until at least five years after repeated Wassermann tests have become negative. If the spinal fluid Wassermann test of the husband and the blood Wassermann test of the wife are negative, the couple may have another baby. However, in order to be on the safe side the wife should have a full course of antisyphilitic treatment throughout the pregnancy but the doses should be smaller than normal. The suggestion concerning the prophylactic treatment during gestation should be made to the wife in the proper manner in order to avoid arousing an undesirable psychic effect.

COMPARISON OF TESTS FOR SYPHILIS

To the Editor—How does the Wassermann test compare with modifications such as the Kahn, the Kline and the Eagle? Kindly give them in the order of relative value. Please omit name.

M D Florida

ANSWER—The Kahn, Kline and Eagle tests are not modifications of the Wassermann test. These tests are not based on the principle of complement fixation but on the principle of precipitation. The relative value of various modifications of the Wassermann test in comparison with precipitation tests is apparent from the result of the recent evaluation study of tests for syphilis carried out by the United States Public Health Service with the cooperation of the American Society of Clinical Pathologists. The report of this study appeared in *THE JOURNAL*, June 8, 1935, page 2083. The results given in this report indicate that of the thirteen methods employed the Kahn stand ard test with serum and with spinal fluid was the most dependable and that the Kline test ranked next in dependability. Also the results of these two precipitation tests were superior to any of the Wassermann methods employed in this evaluation study.

Medical Examinations and Licensure

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P Murdoch 147 W Main St Meriden

DELAWARE Dover July 13 15 Sec Medical Council of Delaware
Dr Joseph S McDaniel Dover

DISTRICT OF COLUMBIA Washington Jan 11 12 Sec Commission
on Licensure Dr George C Ruhland 203 District Bldg Washington

FLORIDA Jacksonville, Nov 16-17 Sec Dr William M Rowlett
P O Box 786 Tampa

IOWA Des Moines Dec 13 Dir Division of Licensure and Regis-
tration, Mr H W Greife, Capitol Bldg Des Moines

KANSAS Topeka Dec 8-9 Sec Board of Medical Registration and
Examination Dr C H Fwing 609 Broadway Larned

KENTUCKY Louisville Dec 2-4 Sec, State Board of Health Dr
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1507 Hibernia Bank Bldg New Orleans

MARYLAND Regular Baltimore Dec 8 Sec Dr John T O'Mara
1215 Cathedral St Baltimore *Homeopathic* Baltimore Dec 8-9 Sec
Dr John A. Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston, Nov 17 19 Sec Board of Registration in
Medicine Dr Stephen Rushmore 413 F State House Boston

NEBRASKA Lincoln Nov 23 24 Dir Bureau of Examining Boards
Mrs Clark Perkins State House Lincoln

NEW HAMPSHIRE Concord, March 11 12 Sec Board of Registra-
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Lawrence 503 Professional Bldg, Raleigh

NORTH DAKOTA Grand Forks Jan 5 8 Sec Dr G M Williamson
4½ S. 3rd St., Grand Forks

OHIO Columbus Dec 2-4 Sec, State Medical Board Dr H M
Platter 21 W Broad St., Columbus

OKLAHOMA Oklahoma City Dec 9 Sec Dr James D Osborn Jr
Frederick

OREGON *Basic Science* Portland, Nov 21 Sec Mr Charles D
Byrne, University of Oregon Eugene, *Medical* Portland Jan 5 7
Sec., Dr Joseph F Wood 509 Selling Bldg Portland

PENNSYLVANIA Philadelphia January Sec Board of Medical Educa-
tion and Licensure Mr James A Newpher Education Bldg Harrisburg

PUERTO RICO San Juan March 2 Sec Dr O Costa Mandy
Box 536 San Juan.

SOUTH DAKOTA Pierre Jan 19 20 Dir Division of Medical Licen-
sure, Dr B A Dyer Pierre.

VERMONT Burlington, Feb 10 12 Sec. Board of Medical Registra-
tion Dr W Scott Noy Underhill

VIRGINIA Richmond Dec. 9 13 Sec. Dr J W Preston 28½
Franklin Road Roanoke.

WISCONSIN *Basic Science* Milwaukee Dec 19 Sec Prof Robert
V Bauer 3414 W Wisconsin Ave., Milwaukee *Medical* Madison
Jan 12 14 Sec. Dr Henry J Gramling 2203 S Layton Blvd
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AMERICAN BOARD OF INTERNAL MEDICINE *Written* examination will
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AMERICAN BOARD OF OPHTHALMOLOGY Los Angeles Jan 23 *All*
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Only applications received by the Secretary on Dec 1 or before will be
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gan Ave. Chicago

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Dr Byrl R Kirkin Mayo Clinic Rochester

AMERICAN BOARD OF UROLOGY Chicago Dec. 4-6 Sec. Dr Gilbert
J Thomas 1009 Nicollet Ave Minneapolis

West Virginia July Report

Dr Arthur E McClue, secretary, West Virginia Public
Health Council, reports the oral and written examination held
in Bluefield July 13 15 1936 The examination covered 11
subjects and included 110 questions An average of 80 per
cent was required to pass Thirty-four candidates were exam-

ined, all of whom passed Six physicians were licensed by
reciprocity The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1936)	88 4	
Loyola University School of Medicine	(1936)	85 9	
Northwestern University Medical School	(1936)	85 3	
Rush Medical College	(1934) 86 7 (1936) 86 8	88 7 89 4	91 3
University of Louisville School of Medicine	(1934) 88 1 (1935)		86 6
University of Maryland School of Medicine and College of Physicians and Surgeons	(1935)	86 3	89 4
Harvard University Medical School	(1935)	87 8	
Cornell University Medical College	(1935)	88 8	
University of Cincinnati College of Medicine	(1935)	86 6	
Western Reserve University School of Medicine	(1935)	89 1	
Jefferson Medical College of Philadelphia	(1935)	87 4	89 9
University of Pennsylvania School of Medicine	(1935)	88 4	
Medical College of the State of South Carolina	(1933)	89 7	
Medical College of Virginia	(1934)	86 5	
87 (1935) 84 6 85 6 86 1 86 2 87 2, 88 3, 89 6			
University of Virginia Department of Medicine	(1934)		87
(1935) 86 4			
University of Toronto Faculty of Medicine	(1926) 87 3 (1935)		87 6
Deutsche Universität Medizinische Fakultät Prag	(1934)*		83 6

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Emory University School of Medicine	(1928)	(1929)	Georgia
University of Louisville School of Medicine	(1935)	(1935)	Kentucky
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933)		Maryland Virginia
University of Pittsburgh School of Medicine	(1919)		Kentucky

* Verification of graduation in process

Florida June Examination

Dr William M Rowlett, secretary, Florida State Board of
Medical Examiners, reports the examination held in Jackson-
ville, June 15-16, 1936 One hundred and sixteen candidates
were examined, 94 of whom passed and 22 failed The follow-
ing schools were represented

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Med.	(1935) 75 3	(1936)	81
Atlanta College of Physicians and Surgeons	Georgia	(1913)	77 2
Emory University School of Medicine	(1933) 79 79 7 88 5 (1936) 76 6 77 77 6 77 9	(1928)	83 9
81 7, 83 4			
University of Georgia School of Medicine	(1934)		75 4
(1935) 86 9 (1936) 75 78 6			
Rush Medical College	(1929)		75 2
(1934) 86 4 (1936) 84 5			
University of Illinois College of Medicine	(1934)		87 1
Indiana University School of Medicine	(1930) 82 9	(1935)	82 7
Kansas City University of Physicians and Surgeons	No	(1929)	78 6*
University of Louisville Medical Department	(1917)		90 7
University of Louisville School of Medicine	(1935)		77 3
Louisiana State University Medical Center	(1936)	75,	81 5
Tulane University of Louisiana School of Medicine	(1932)		84 1
(1933) 83 1 (1935) 75, 83 7, (1936) 76 9 77 9 79 3,			
82 3 82 5, 83, 83 3			
College of Physicians and Surgeons of Baltimore	(1914)		75
Johns Hopkins University School of Medicine	(1901)		75
(1930) 84 7 (1932) 82 3 (1936) 82			
Harvard University Medical School	(1923)		85 5
(1933) 82 4 (1935) 84 2, (1936) 87 8			
Tufts College Medical School	(1917)		79 3
University of Minnesota Medical School	(1935)		78 4
Washington University School of Medicine	(1931)		80 1
(1936) 79 8			
Albany Medical College	(1919)		77 2
Columbia Univ College of Physicians and Surgeons	(1900)		80 7
(1928) 81 8			
New York Homeopathic Med Col and Flower Hospital	(1934)		77 8
Syracuse University College of Medicine	(1921)		80 9
University of Buffalo School of Medicine	(1919)		78 6
Duke University School of Medicine	(1932) 75	(1934)	80 9
Ohio-Miami Medical College	(1912)		84 2
Ohio State University College of Medicine	(1921)		77 9
(1935) 76 5			
University of Cincinnati College of Medicine	(1935)		76 4
(1936) 80 8			
Western Reserve University School of Medicine	(1935)		75 5
Jefferson Medical College of Philadelphia	(1918)		81 7
(1923) 83 1 (1932) 87 3 (1935) 77 8			
Temple University School of Medicine	(1935)		78 6
University of Pennsylvania School of Medicine	(1933)		83 2
Medical College of the State of South Carolina	(1936)		84 4
Meharry Medical College	(1935) 79 8 80 2	(1936)	75 5
Memphis Hospital Medical College	(1911)		80 2
University of Nashville Medical Department	(1904)		76 1
University of Tennessee College of Medicine	(1932)		79 4
81 1 (1935) 77 9 79 2 81 3 (1936) 77 2 78 9			
Vanderbilt University School of Med.	(1932) 84 7	(1935)	75
Baylor University College of Medicine	(1934)		78 3
University of Texas School of Medicine	(1935)		75
Medical College of Virginia	(1934) 77 1	(1935)	75 3
University of Virginia Department of Medicine	(1936)		76 9
University of Toronto Faculty of Medicine	(1924) 81 5	(1935)	83

School	FAILED	Year Grad	Per Cent
Georgetown University School of Medicine	(1935)		72 7
Albany Medical College	(1915)		73 9
Emory University School of Medicine	(1931)		61 4
(1932) 72 7 (1934) 70 8			
Chicago College of Medicine and Surgery	(1911)		56 3
Jenner Medical College Chicago	(1910)		63 5

University of Illinois College of Medicine	(1928)	71
Louisville and Hospital Medical College	(1908)	69 6
Tufts College Medical School	(1933)	72 1
Fordham University School of Medicine	(1913)	71 6
Long Island College Hospital	(1906) 69 6	66 8
New York Homeopathic Med Col and Flower Hospital	(1933)	73 9
University of the City of New York Medical Dept	(1895)	73
Miami Medical College Ohio	(1901)	61 4
Meharry Medical College	(1935)	62 2
Medical College of Virginia	(1927)	72
University of Virginia Department of Medicine	(1925)	73 3
University of Toronto Faculty of Medicine	(1920)	73 9
Western University Faculty of Medicine, Canada	(1917)	71 9
Universidad de la Habana Facultad de Medicina y Farmacia	(1907)†	62 2

* Repeated senior year at Emory University School of Medicine
 † This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship
 ‡ Verification of graduation in process

Vermont June Examination

Dr W Scott Nay, secretary Vermont State Board of Medical Registration, reports the written examination held in Burlington, June 24-26 1936. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Thirty candidates were examined all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1936)		85 1 *
Harvard University Medical School	(1935)		86 2
Tufts College Medical School	(1935)		83 5
Creighton University School of Medicine	(1936) 79 2 *		86 1 *
University of Vermont College of Medicine	(1935)		81
83 * 87 9 * 91 2 (1936) 81 3 * 83 1 * 83 3 * 83 5 *			
84 5 * 84 7 * 85 6 * 86 3 * 86 4 * 87 3 * 87 3 * 87 4 *			
87 4 * 88 6 * 88 9 * 90 * 90 1 * 90 3 * 90 6 *			
McGill University Faculty of Medicine	(1934)		90
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia	(1934)†		83 1

Nine physicians were licensed by endorsement from January 3 through August 7. The following schools were represented:

School	LICENSED BY	ENDORSEMENT	Year	Endorsement
			Grad	of
Baltimore Medical College			(1904)	Ma *
Harvard University Medical School			(1932)	Ma *
Tufts College Medical School (1920) Massachusetts			(1932)†	B M Ex
Albany Medical College			(1935)	New York
Jefferson Medical College of Philadelphia			(1934)†	B M Ex
University of Vermont College of Medicine			(1933)†	B M Ex
University of Virginia Department of Medicine			(1930)	New York
McGill University Faculty of Medicine			(1925)	Penna

* License has not been issued
 † Verification of graduation in process

Louisiana June Report

Dr Roy B Harrison secretary Louisiana State Board of Medical Examiners, reports the written examination held in New Orleans, June 4-6 1936. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety-seven candidates were examined 96 of whom passed and 1 failed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Rush Medical College		(1934)	86 9
State University of Iowa College of Medicine		(1936)	86 7
University of Kansas School of Medicine		(1934)	83 5
Louisiana State University Medical Center		(1936)	84 5 *
	84 7 * 84 7 * 85 1 * 86 * 86 1 * 86 2 * 86 3 * 86 4 *		
	86 6 * 86 8 * 86 9 * 86 9 * 86 9 * 87 1 * 87 1 * 87 1 *		
	87 8 *		
Tulane University of Louisiana School of Medicine		(1933)	83 6
	(1936) 80 8 81 1 81 4 81 8 81 9 81 9 82 8 82 2		
	82 2 82 4 82 4 82 6 82 9 82 9 83 8 83 1 83 2 83 3		
	83 8 83 5 83 5 83 6 83 6 83 8 83 8 83 9 83 9 84		
	84 6 84 7 84 7 84 7 84 7 84 7 84 8 84 8 84 9		
	85 8 85 2 85 2 85 2 85 3 85 6 85 6 85 6 85 7 85 8		
	85 9 85 9 86 1 86 1 86 2 86 2 86 2 86 3 86 4		
	86 5 86 5 86 7 86 8 86 8 86 9 87 1 87 4 87 9		
	88 8 88 4 88 5 88 6 88 7		
University of Tennessee College of Medicine		(1925)	76 2
University of Texas School of Medicine		(1932)	86 8

School	FAILED		Year Grad	Per Cent
Memphis Hospital Medical College			(1911)	41

School	LICENSED BY RECIPROCITY	Year (grad	Reciprocity with
University of Arkansas School of Medicine		(1934)	Arkansas
University of Louisville School of Medicine		(1931)	Kentucky
Tulane University of Louisiana School of Medicine		(1932)	Mississippi
St. Louis University School of Medicine		(1929)	Missouri

This applicant has received the M.B. degree and will receive the M.D. degree and Louisiana license on completion of internship.
 † This applicant has been issued a temporary permit and will be issued a license on completion of U.S. citizenship.

Book Notices

Minor Surgery By Frederick Christopher S.B. M.D. F.A.C.S. Associate Professor of Surgery at the Northwestern University Medical School Chicago. With a foreword by Allen B. Kanavel M.D. F.A.C.S. Professor of Surgery at the Northwestern University Medical School. Third edition. Cloth. Price \$10. Pp 1030 with 709 illustrations. Philadelphia & London W. B. Saunders Company 1936.

This edition has been considerably amplified by the addition of a number of newer methods of treatment, most of which have been well established from their use by a number of surgeons. The opening chapters include a general discussion and treatment of wounds, infections, injuries and circulatory disturbances. Tumors, injuries, fractures, dislocations, infections and deformities of the various regions of the body are taken up systematically. The male and female genito-urinary organs and the anus and rectum are considered in separate chapters. Minor surgical technique and the duties of a surgical intern conclude the book. Illustrations are numerous and well chosen. They add materially to the value of the text. Numerous authorities for preferred treatment and modern points of view are given credit and in some instances brief excerpts are taken from current literature. A practical approach is made to the problems of minor surgery by frequently giving not only the author's preferred treatment but also widely used methods from leading clinics. It is explained by the author that what seems to be minor surgery at first may rapidly develop into major surgery even with the most expert early treatment. From this conception one must appreciate that the subjects included here are of much more than minor importance both to the patient and to the physician. In fact it is in this highly diversified and borderline field which strictly should not be called minor surgery, that experience is so necessary in the prevention of dangerous complications, which may require the most expert treatment or even complicated major surgery. The author offers those who meet surgical conditions which at first do not appear to be of a serious nature an opportunity to learn how such conditions may be best treated. Every hospital resident should read this book and every practitioner should profit through its study.

Plague: A Manual for Medical and Public Health Workers By Wu Lien Teh M.A. M.D. Director Welshengshu National Quarantine Service. J. W. H. Chun M.B. B.C. Senior Quarantine Officer Shanghai. R. Pollitzer M.D. Microbiologist Shanghai Quarantine Station and C. Y. Wu M.B. B.S. Chief Technical Expert Welshengshu National Quarantine Service. Cloth. Price \$4.15. Pp 347 with 103 illustrations. Shanghai China Welshengshu National Quarantine Service 1936.

It has remained for these workers in China to furnish probably the most comprehensive survey of plague in any language, certainly the most satisfactory in English. The work is a thoroughly modern treatise on the subject, mentioning even the focus of rodent plague that was discovered only in 1935 in Montana. The book, as might be expected, is particularly full on the history of the disease in China, although the authors reject the view, so often expressed, that the province of Yunnan is an endemic focus. A list of Chinese epidemics going as far back as 224 B.C. is given. Among pioneer workers are listed S. B. Grubbs and the late J. J. Kinyoun both of the U.S. Public Health Service the former for his ship ratproofing work and the latter for his work in California in 1900. The highly controversial question as to the discovery of the causative organism of plague is disposed of by crediting Kitasato with first having seen the organism now known as *Pasteurella pestis* and Yersin with first having secured it in pure culture. The authors agree with early workers as to the great value in the diagnosis of the bubonic type of plague in man that is derived from a careful study of the gross pathology of the disease.

The authors consider outbreaks of the pneumonic type of plague to have their origin in cases of the bubonic type in which lung lesions secondary pneumonia have developed but admit that not all the factors leading to the origin and spread of the pneumonic type are well understood and that a 'pneumotropism' must be considered as a possibility. There are facts in connection with the history of pneumonic plague in the United States that furnish some supportive evidence for

the latter view. The opinion is expressed that while serum therapy is not spectacularly successful, some benefit is derived from it. Bacteriophage therapy, so much written about a few years ago, is not considered of material value. In consideration of prophylactic measures, stress is laid on the importance of an educational campaign whenever antiplague procedures are necessary, even when the work is to be carried out among an ignorant population. Rat proofing as an antiplague measure is favorably regarded, and instructions in detail are given for its accomplishment. Bacterial viruses for rat destruction are not considered as important as chemical poisons. The difficulty of mass vaccination is considered and the measure is looked on with some favor, though the reader is warned that it is not to be expected to control an epidemic but rather to be used along with other and more directly effective measures. Under the head of measures against rural rodents, the statement is made with respect to the California ground squirrels that "the problem of the extermination of the pest has exercised the attention of the United States Health authorities for nearly thirty years and remains to be solved," a statement with which any one familiar with the problem will agree and one that probably is applicable to sylvatic plague anywhere. The prophylaxis of the pneumonic type of the disease is regarded more hopefully than is usually the case. This is a subject on which the authors speak with final authority on account of their large experience with this type of plague. Their injunction is that those sick of pneumonic plague must be hospitalized early (during the first twenty-four hours of illness) and that contacts of the sick are to be isolated promptly. The importance of early isolation of the sick lies in the very low, or absent, infectiveness of the patient during this period. The book is one that every research worker in plague and every administrative authority dealing with the disease will find useful—almost indispensable.

Studies in Brucella Infections. Michigan State College of Agriculture and Applied Science. Agricultural Experimental Station. Section of Bacteriology. Technical Bulletin No. 149. Paper. Pp. 51. East Lansing, Michigan, 1936.

This bulletin contains five papers, on nonspecific agglutination in the Brucella group, the chemical examination of an avirulent strain of *Brucella abortus*, a study of *Brucella abortus*-infected tissues as immunizing agents against *Brucella* infection in the guinea pig, a method for measuring the opsonocytaphagic power of the blood of cattle for *Brucella*, and undulant fever specific treatment with brucellin and procedures for diagnosis. These reports record the continuation of the splendid studies on brucellosis made by Huddleson and his collaborators at Michigan State College.

The first study reveals that partially or completely dissociated strains of *Brucella* are unreliable as antigens for the agglutination test. There are long intervals during which dissociated strains are heat stable. The thermo agglutination test serves only as an approximate means of detecting rough and dissociated variants of *Brucella*. It cannot be depended on entirely as a routine test for the selection of normal cultures for use as antigens in the agglutination test.

The second paper describes the occurrence and properties of various cellular fractions of an avirulent strain of *Brucella abortus* compared with the composition of normally virulent strains. The principal differences were found to consist in serologic dissimilarities between the protein fractions and in the absence in the nonpathogenic strain of a conjugated protein constituent which is largely responsible for the toxicity and serologic properties of the virulent strain.

The third study was made to determine the value of *Brucella abortus* infected tissue as an immunizing agent against *Brucella* infection in the guinea pig. The spleens of infected guinea pigs and infective fetal exudate from fetal membranes treated to render them noninfective were studied. The results showed conclusively that when infected guinea-pig spleen and exudate from the fetal membranes of an aborted bovine fetus are treated with either chloroform or solution of formaldehyde to render them noninfective they are without value as immunizing agents against experimental *Brucella abortus* infection in the guinea pig.

The fourth report describes a method for determining the degree of immunity in cattle against *Brucella* infection. The

method involves the measuring of the phagocytic power of the polymorphonuclear leukocytes in an opsonocytaphagic system.

The fifth paper describes the results obtained in the treatment of 100 cases of brucellosis (undulant fever) in human beings with brucellin, a fraction of *Brucella* cells obtained by growing the organisms in peptic digest liver broth. The bacteria-free active agent is recovered from the liver broth filtrate. Of the 100 patients who were treated with brucellin, twenty-three were under 11 years of age. A small number were laboratory workers who contracted the disease in line of duty. From information obtained by physicians in charge of the nonlaboratory cases there was convincing evidence that more than 75 per cent contracted the disease through the ingestion of raw infective dairy products. In the cases of children and infants there was no evidence which would indicate that the source of infection was any other than raw infective milk. There were twenty-nine cases in which agglutinins could not be demonstrated in the blood in a dilution of 1:20 or above. Eighteen of these, or 62 per cent, were in children under 11 years of age. The diagnosis in these cases was based on a positive allergic skin test and opsonocytaphagic blood test or a positive blood culture. The authors believe that the further use of these diagnostic methods, in addition to the agglutination test, will dispel the long held assumption that children are not as susceptible to the disease as are adults. The intradermal testing was done with a standardized *Brucella* nucleoprotein suspensoid known as "Brucin." The authors have outlined in detail the procedure to be followed in using brucellin as a therapeutic agent. Of the seventy cases in which the duration of symptoms was less than 121 days before treatment with brucellin, recovery occurred in fifty-one (73 per cent) within twenty-two days after the first injection, and in eighteen (26.1 per cent) after the twenty-second day period, one (1.4 per cent) failed to respond to treatment. Of the thirty cases in which the duration of symptoms was more than 120 days before treatment, recovery occurred in seventeen (56.6 per cent) within twenty-two days after the first injection and in ten (33.3 per cent) after the twenty-two day period, two terminated fatally and one failed to respond to treatment. If the six cases that failed to respond to treatment and the two in which death occurred are excluded it was found that the average duration of illness per case before treatment was 159.3 days. The average duration of illness per case after treatment was begun was 18.2 days.

An Epitome of Obstetrical Diagnosis and Treatment in General Practice. By Bethel Solomons, M.D., F.R.C.P.I., F.C.O.G., Gynecologist, Dr. Steevens Hospital, Dublin. Volumes I and II. Second edition. Cloth. Price 2s. 6d. per volume. Pp. 184, 65, 140. London: John Bale Sons & Danielsson Ltd. 1936.

The amount of useful information which the author has included in these two booklets is amazing. The books were written for general practitioners, hence all the advice given is of a practical nature. The first volume is divided into two parts, the first of which deals with normal pregnancy, normal labor and the uncomplicated puerperium. The second part is concerned with abnormal pregnancy and includes the toxemias, uterine hemorrhages, ectopic pregnancy, diseases of the ovum and diseases in pregnancy. In the second volume the author takes up abnormal labor, the abnormal puerperium and obstetric operations. In discussing the conduct of labor, the author says:

There is no need to wear masks or gowns, but the doctor should not blow or cough into the vagina. Since the use of a mask entails no trouble and but little expense it should be used during every delivery, because droplets from the mouth may reach the vulva and vagina not only during blowing and coughing but also while the physician is talking. The author favors the use of episiotomy where indicated and its repair with large, through and through silk-worm sutures. In the treatment of eclampsia, Solomons favors the use of purgatives, colonic lavage and gastric lavage, procedures that have largely been given up in this country. For the treatment of accidental hemorrhage (abruptio placentae) the author recommends puncture of the membranes, solution of posterior pituitary and treatment of collapse especially with saline solution. He believes that the best therapy for placenta praevia is version, regardless of whether the cervix is completely dilated or not, but he

BOOK NOTICES

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properly emphasizes that after the version the patient should be left to deliver herself. Cesarean section is reserved for some cases of placenta praevia, the classic operation being the one of choice. The sections dealing with the conduct of labor are particularly commendable. In the treatment of postpartum hemorrhage, Solomons advocates the use of a hot intra-uterine douche, but this procedure has so many disadvantages that it may well be omitted from the treatment of postpartum bleeding. Chloroform is recommended, although the author definitely points out its limitations. The author's vast experience as an obstetrician and gynecologist is evident by the sound advice given in every chapter. The booklets will prove valuable not only to general practitioners but also to medical students, because they completely summarize the actual practice of obstetrics.

Clinical Heart Disease By Samuel A. Levine M.D. F.A.C.P. Assistant Professor of Medicine Harvard Medical School. Cloth. Price \$5.50. Pp. 445 with 87 illustrations. Philadelphia & London W. B. Saunders Company 1936.

One who is familiar with Dr. Levine's numerous contributions to the subject of heart disease has no difficulty in recognizing that much in this volume is virtually what he has published elsewhere. The book, however, is not merely a random collection of reprints. The old material has been worked over and collected into what may be viewed as a collection of essays, each with a direct bearing on the topic of the clinical features of heart disease. The chapters or essays are arranged in a somewhat casual order yet in such a way that each chapter or group of chapters contains a fairly complete presentation of one topic—like a short story. Thus there are three consecutive chapters devoted to acute rheumatism and rheumatic heart disease, one chapter of some fifty pages is on angina pectoris and coronary thrombosis, fourteen pages are given to acute and subacute endocarditis, thirty to the treatment of congestive heart failure. The longest chapter, more than 100 pages, is the one on clinical electrocardiography. There are two short but interesting chapters, one on the clinical significance of the systolic murmur, the other on acute cardiovascular emergencies. The book is not suited to the needs of the undergraduate, whose guide should be a text more comprehensive than this with more consideration of pathologic anatomy, etiology, physiology and historical background, however, is it for the research worker. The author's purpose, however, was to write a book that might help the general practitioner solve some of the difficult problems presented by heart disease. This purpose has been well fulfilled. It is a pleasure to note that emphasis is put on the frequent possibility of reaching a diagnosis by history and study of symptoms and signs without the appeal to the laboratory or the instrument of precision. It is also a pleasure to state that the author's views seem in general to be sound. If occasionally he is a little nonorthodox, he makes himself responsible. This preservation of individuality is in no sense offensive, it is, rather, refreshing.

Aural Therapy in Relation to Deafness By Professor D. F. Fraser Harris M.D. D.Sc. B.Sc. With a foreword by Sir James Purves Stewart K.C.M.G. C.B. M.D. Second edition. Cloth. Price 7s. 6d. Pp. 45 with 10 illustrations. London: Sterling Medical Publishing Co. [n.d.]

This short treatise, with a foreword by Sir James Purves-Stewart and an introduction "by an unnamed professor on the faculty of medicine at an English University," devotes a chapter to varieties of deafness in which the author speaks of congenital and acquired as well as deafness secondary to generalized infections such as measles, scarlet fever, "rheumatism" and some forms of catarrh of the nose and throat. The second chapter deals with causes of deafness and also briefly discusses the anatomy of the ear. Among the causes of impaired hearing mentioned are cerumen, injury to the drum membrane, and obstruction of the eustachian tube. A rather striking statement is that another form of deafness is due to otosclerosis which is a rheumatic condition for just as people with rheumatism find their knuckles swell so the bones of the head may swell and be distorted. In view of all the research that has been done on the etiology of otosclerosis this theory certainly appeals to one as rather strange. In the third chap-

ter the diagnosis of deafness is discussed. The apparatus used is the audiograph, which is similar in many ways to the various types of audiometers used in this country. A number of graphs are shown and one type of deafness is termed "neurotinnitus deafness," with "otosclerosis" in parenthesis. The fourth chapter deals with treatment by hearing aids, and the author emphasizes the fact that the aids should be prescribed to suit the individual requirements of the patients, depending on the type of hearing impairment present. The next chapter describes the treatment of certain forms of impaired hearing by means of a "thermocatheter," used, however, in the external auditory nerve canal. The principle is that an oil with a low melting point is placed in the small cup of the instrument called thermocatheter, the inside of which can be warmed by an electric current. When the contents of the cup have reached the proper temperature the fatty ointment begins to flow out of the little cup down the meatus to be absorbed first into the does its work without waiting to be absorbed first into the blood and then carried round the circulation in order to reach the ear. The author states that in cases of senile deafness and "of deafness associated with rheumatic and gouty conditions, this form of direct medication is very helpful and should be persisted in for some length of time." In the sixth and final chapter the author states that by the use of audiometric measurements, changes in hearing are detected which were overlooked when only tuning forks were used. This brochure is unique in some of the points it emphasizes also in the use of certain terms, such as "neurotinnitus deafness" and in its description of otosclerosis as a rheumatic condition.

L'année électro radiologique Par Morel Kahn avec la collaboration de M. G. Appell Duclaux et al. Deuxième année (1934-1935). Paper. Price 40 francs. Pp. 266 with 38 illustrations. Paris: Masson & Cie 1936.

This is an annual report divided into three parts, roentgen diagnosis, therapeutic radiology and electrotherapy. The subjects considered in each chapter contain a clinical discussion and a special description of the techniques of roentgen examination, which are well illustrated, and the treatment with roentgen radium or electric modalities. The subjects of the first part are pneumoconiosis, tuberculosis of the granules froides diseases of the pharyngolarynx, diverticulitis of the gastro intestinal tract, amebic colitis, diseases of the pancreas, vasoraphy of blood and lymph vessels, diseases of the vertebrae and tumors of the hypophysis. The text is clear, and the characteristic conditions are italicized. The chapter on radiation therapy includes the application to disturbances of the sympathetic system, which are made either centrally over the puncta dolorosa or regionally or cutaneously over the puncta dolorosa. Total body irradiations are next discussed. They are used in general of the blood, of the reticulo-endothelial system and in general in permanent and paroxysmal hypertension in the angims and in arteriosclerosis of the extremities are given. The treatment of secondary glandular carcinoma is the most difficult problem in the treatment of cancer. Prophylaxis is discussed from surgical and radiologic standpoints. The best treatment appears to be a combination of surgery, radium and roentgen rays. A description of radium therapy in cutaneous angiomas follows. Finally the researches on artificial radioactivity are reported including irradiations with light rays and electric currents. Next a discussion of fever therapy is given. An interesting article is assigned to the treatment of benign uterine hemorrhages caused by myomas which may be successfully treated with radium roentgen rays or electrolysis with copper or silver. Submucous polypi are destroyed by electrocoagulation. Functional hemorrhages indicate interstitial electrolysis and diathermy of the hypophysis. A discussion of the treatment of diffuse peritonitis recommends evacuation of the purulent material and direct exposure to ultraviolet rays. The treatment of injuries by light rays as sun and heat concludes the review. An annex reports the scientific proceedings of the national and international congresses of radiology held during 1934-1935. The annual is a valuable contribution. It has a recommendable advantage by reporting only those investigations in which original and good work has been done.

Your Breath and Your Health By Louis M Pearlman M.D. Cloth Price \$1 Pp 128 with 8 illustrations New York Academy Publishing Company 1936

After an introduction by Barnet Joseph and a preface by the author, this little book is divided into three parts. The first is a physiologic survey of the sense of smell, metabolism, respiration and the blood circulation. The second part deals with the local causes of bad breath, particularly as regards the mouth, teeth, tonsils, sinuses, nose and ear infections. The third portion concerns itself with the systemic or constitutional causes of bad breath. This includes diseases of metabolism, infections and neuroses. Foul breath, or "fœtor ex ore" as it is known medically, is a subject that well warrants attention. The public mind has been aroused by advertisements of certain well known preparations to be used as mouth washes and gargles, in the effort to remove the so-called halitosis. Many people believe that bad breath is due to some disturbance of the stomach. Otolologists have, of course, known for a long time that conditions in and about the mouth and throat are most common causes of this disagreeable condition, and particularly the caseous plugs which form in the tonsil crypts. This little book is evidently intended for the layman and as such should prove exceedingly enlightening and lead many to seek medical attention to relieve foul breath. The work is systematically arranged and the illustrations are simple and easily understood.

Die Tuberkulose Therapie des praktischen Arztes mit diagnostischen Bemerkungen Von Prof. Dr. Kurt Klare Arzt Direktor der Prinzregent Luitpold-Kinderheilstätte Scheidegg und Dr. Hans Heinrich Knäsel Chefarzt der Heilstätte Harzgerode Ninth and tenth edition Paper Price 8 marks Pp 111 with 41 illustrations Leipzig Curt Kabitzsch 1935

This book attempts to give to the clinician a short survey of the facts necessary for understanding the distribution, course, prophylaxis, diagnosis and treatment of tuberculosis. The authors, both working in large tuberculosis sanatoriums, do not enter deeply into the theories and the manifold problems of the disease but concentrate strictly on that which is necessary for practical work. In the chapter on prophylaxis and general treatment the social questions and the special conditions in Germany with her well organized tuberculous "fuersorge" system are mainly referred to. The results of the tuberculin tests, blood picture, sedimentation test and sputum examination are evaluated and the general treatment, as well as chemotherapy, and the problems of nutrition are discussed. Therapeutic measures for fever, cough and pulmonary hemorrhage are given. Much space is devoted to the indications and descriptions of surgical procedures, especially pneumothorax, the excellent results of which are emphasized by instructive illustrations. The indications for isolation of the patient from the family and for hospitalization also are stated. In pregnancy the authors feel that artificial interruption is necessary only on rare occasions. A special chapter deals with tuberculosis in childhood, where hereditary and constitutional factors are greatly stressed, and finishes with a short survey of the extrapulmonary forms of childhood tuberculosis. The general practitioner may get some quick information from this book but little of value is presented to the physician familiar with any standard textbook on the subject.

Annual Report for the Year 1935 Central Narcotics Intelligence Bureau Egyptian Government Paper Price P.T. 10 Pp 164 with illustrations Bulaq Cairo Gort Press 1936

This is an exhaustive report on the activities of the Central Narcotics Intelligence Bureau of the Egyptian government for the year 1935. Smuggling trafficking, seizures, prosecutions and judgments narcotic addiction, adulteration of narcotic drugs the social effects of narcotic addiction, and legislation in Egypt and other countries are discussed, and elaborate tables are given on practically all the important aspects of the narcotic problem. Hashish seems to be largely used by the drug addicts of Egypt. Cocaine and the derivatives of opium other than diacetylmorphine apparently play a minor part. Traffic seems to be carried on according to usual methods, such as through concealment in the soles of shoes in the interior of canes, and between the false walls of containers of various kinds, but the reported case in which opium was concealed in the gullets of birds is probably unique. If the data given in this report are accepted at face value it may be

assumed that narcotic drug addiction is on the wane in Egypt but even so there remains plenty to do and the problem of treatment and cure of narcotic addicts is as yet unsolved. The director of the bureau recommends that the Egyptian government send a mission of carefully selected doctors to the United States to study methods of treatment prevailing in this country. His idea as to the basic method to be pursued in suppressing illicit traffic, as stated at Geneva in May 1935, is set forth in the report.

As I have said before important narcotic seizures do not fall into one's lap like ripe plums nor is information to be had for nothing from Sunday school teachers and other honest folk.

To fight the illicit traffic good information must be obtained from the inside and must be paid for while anticontraband services must be well funded well paid and well rewarded.

Of this record and report the Central Narcotics Intelligence Bureau of Egypt may well be proud.

The Practitioners Library of Medicine and Surgery Volume X Dermatology and Syphilology Supervising Editor George Blumer M.A. M.D. David P. Smith Clinical Professor of Medicine Yale University School of Medicine Associate Editor C. Guy Lane M.D. Instructor in Dermatology and Syphilology Harvard Medical School Cloth Price \$10 Pp 1043 with illustrations New York & London D. Appleton Century Company Incorporated 1936

In this volume thirteen eminent dermatologists collaborate to present a complete textbook of dermatology and syphilology. The opening chapter is a general discussion of common conditions affecting the skin as well as general methods of diagnosis and treatment. Then follow infections of the skin various forms of dermatitis, tumors, toxic dermatoses, other dermatoses, abnormalities, diseases of the nails and hair and of the lips and mucous membranes, pigmentary disturbances endocrine manifestations, neuroses and syphilis. The section on syphilis, by Dr. Joseph Earle Moore, is essentially a condensation of the more extensive volume on the subject made available independently. There are hundreds of pictures such as are necessary in any textbook of dermatology, and a good index to complete the volume. Each of the chapters is supplemented by a brief bibliography. The book is a commendable volume and fits well into the system of which it is a part.

Les atrophies gastriques dans les anémies idiopathiques et les métanémies Par Robert Lehmann Paper Pp 119 with illustrations Paris Librairie E. Le François 1936

Lehmann has studied the gastroscopic appearance of the stomach by the Schindler technic in nineteen patients and correlated his observations with the radiologic, clinical and hematologic data in each case. In four cases of pernicious anemia he found "zonal" atrophic gastritis associated with hunterian glossitis and total gastric achylia. In one instance he observed the simultaneous regression of the gastritis and glossitis with liver therapy. In five cases of hypochromic anemia no atrophy and "zonal" atrophy of the stomach were found once each and diffuse atrophy three times. One of these patients was reexamined after iron therapy and showed regression of the atrophy. Three of four patients with aplastic and pseudo-aplastic anemia showed diffuse atrophy. A patient without anemia but with zonal atrophy reexamined after iron therapy showed definite improvement in the appearance of the mucous membrane, and another patient with macrocytosis but no anemia showed a disappearance of diffuse atrophy following liver therapy. Lehmann's conclusions are rather more definite than justified by his limited number of observations. His belief that "zonal" atrophy responds to liver therapy and diffuse atrophy to iron therapy should however be provocative of further studies.

Illustrious Contributors to Public Health Being the Names Carved on the New Building to House the Departments of Health Hospitals and Sanitation and the Office of the Chief Medical Examiner A Souvenir Prepared for the Dedication Exercises on Tuesday November 26 1935 By Charles Frederick Bolduan M.D. Department of Health City of New York Cloth Pp 33 with 28 illustrations Privately printed New York The Author 1936

This book was prepared as a souvenir for the dedication of the new building to be devoted to public health in New York City. On the various façades of the building the names of great contributors to medicine have been carved. The purpose of the souvenir booklet is to provide thumb-nail biographic sketches of those whose names have merited this honor. There are also some excellent photographs of these great contributors to the advancement of public health.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Typhoid Fever Liability of Municipality—Ogden City owns and operates a water supply system, including sources of supply, by means of which it supplies water to its inhabitants. A major portion of the water is obtained from artesian wells. When necessary, however, additional water is obtained from a canyon stream known as Wheeler Creek. In 1928 the state sanitary engineer reported that the latter source of supply would be "subject to human contamination" and recommended that the water be chlorinated. The city purchased a chlorinator and contracted for the erection of a building to house it. The chlorinator was not used, however, until after July 11, 1929. In the meantime the city continued to use water from Wheeler Creek. During the latter part of June and the early part of July, 1929, fifteen known cases of typhoid fever developed in the city. In the present proceedings, the legal representatives of two of the typhoid patients who died sued the city, alleging that the deaths were caused by typhoid fever contracted through drinking contaminated water negligently furnished by the city. From a judgment in favor of the city, the plaintiffs appealed to the Supreme Court of Utah.

According to the evidence, test samples of water from Wheeler Creek, taken during the summer of 1928 and on July 1, 1929, showed the presence of coli bacilli. A test sample taken from the city mains on June 15, 1929, was negative for coli bacilli, but another sample taken July 14, 1929, was positive. Expert witnesses testified that the presence of coli bacilli in the water indicated contamination with either human or animal fecal matter and that their presence constituted a warning that typhoid germs might also be present. Water so contaminated is regarded as unfit for human consumption. Expert witnesses for the plaintiffs testified that the water supply was probably the source of the typhoid infection. On behalf of the city, it was shown that five of the persons who contracted typhoid fever had eaten at a certain restaurant, a waitress in which later had developed typhoid fever, and that eight others had frequented another place which was also frequented by a typhoid carrier. It was shown, furthermore, that a number of summer residents at a resort at the mouth of Wheeler Canyon were supplied with water from Wheeler Creek in June and July, 1929, and that none was known to have been ill. Expert witnesses for the city excluded the city water as a probable source of infection, basing their opinions, in part, on the fact that thirteen of the persons contracting the disease had been in contact with other possible sources of infection. They pointed to the fact, too, that only a comparatively small number of cases developed among the 40,000 people using the city water and that the percentage of mortality was comparatively high. In epidemics attributed to contaminated water, they testified, the numbers of cases are usually greater and the percentage of mortality is low on account of the dilution of the bacteria in the larger supply of water. Where there is direct infection, however, the masses of typhoid bacteria are greater, resulting in higher mortality.

In cases of this kind, said the court, involving infection by germs of microscopic size, it is frequently impossible to establish by definite proof the source of infection. The plaintiffs, by circumstantial evidence, attempted to prove that the illness was caused by drinking the city water, which in 1928 and in July, 1929, was found to be polluted by coli bacilli. There was no direct evidence that it was so contaminated early in June when the two inhabitants involved in this case contracted the disease. There was no showing of typhoid germs in the water at any time. If all other probable sources of the infection are eliminated, the court said, a reasonable inference might be drawn that the water caused the illness. The city attempted to show, by circumstantial evidence, that there were other probable sources of infection. Neither party was able to show any preexisting typhoid case from which the germs might have come. The mere fact that the city water carried coli bacilli

at the time the disease was contracted, if that had been proved, would not necessarily, without considering other facts, be proof that the typhoid germs which caused the disease came from the water. At most, the evidence of the presence of coli bacilli was strongly suspicious. The owner and manager of the summer hotel, whose guests were furnished water directly from Wheeler Creek at about the same point as the city's intake and the city health commissioner, whose information was based on the records in his office, were properly permitted to testify that no sickness had occurred among approximately 100 guests at the hotel during the summer season of 1929. These witnesses were competent. Any limitation as to their knowledge would affect only the weight of their testimony. Since the presence of typhoid germs in the stream was not shown, evidence that none of the guests of the summer hotel who drank the raw water became ill tended to prove, although not conclusively, that the water did not contain typhoid germs.

The case in the opinion of the court was properly submitted to the jury, and after reading the entire record the court concluded that the case was fairly tried and that the jury was adequately instructed as to the law. The judgment of the trial court in favor of the city was therefore affirmed.—*Stoker v. Ogden City, McFarland v. Same (Utah)*, 54 P. (2d) 549.

Criminal Abortion Civil Liability of Physician Who Performs an Illegal Abortion—On grounds of public policy, said the Supreme Court of Oklahoma, a woman may not recover damages from a man who induces her to submit to an operation which produces an abortion where she is of age and voluntarily submits to the operation. In arriving at this conclusion, the court followed the reasoning of the Court of Appeals of the District of Columbia in *Hunter v. Wheate*, 53 App. D. C. 206, 289 F. 604, 31 A. L. R. 980, a case in which a woman sued a physician for the negligent performance of an abortion. In that case the court said:

It has long been the law that where an action is founded upon an unlawful contract the court will not interfere to relieve either of the parties thereto in an action against the other from the results thereof.

This rule applies whether the act is performed in the execution of a contract or not. In other words, it applies to transactions as well as to contracts, and hence the suggestion of appellee that the recovery here was upon the second count in the declaration as for a tort regardless of the contract is of no avail. If the act out of which the cause of action arises is immoral or illegal, the courts will not grant relief.

So in the present case, the Supreme Court of Oklahoma held that where parties to an immoral or illegal transaction are in pari delicto with each other, each is estopped as to the other to take advantage of his own moral turpitude, illegal act or criminal conduct for the purpose of recovering damages for injury sustained as a consequence of their joint wrongdoing.—*Boylan v. Lunsford (Okla.)*, 54 P. (2d) 666.

Society Proceedings

COMING MEETINGS

- American Society of Tropical Medicine, Baltimore, November 18-20.
- Dr. N. Paul Hudson, Department of Bacteriology, Ohio State University, Columbus, Ohio, Secretary.
- National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5.
- Dr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.
- Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4.
- Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Society for the Study of Asthma and Allied Conditions, New York, Dec. 5.
- Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30.
- Dr. J. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Southern Medical Association, Baltimore, November 17-20.
- Mr. C. J. Loran, Empire Building, Birmingham, Ala., Secretary.
- Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17.
- Dr. F. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Southwestern Medical Association, El Paso, Texas, Nov. 19-21.
- Dr. Orville E. Egbert, 116 Mills Street, El Paso, Secretary.
- Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5.
- Dr. Kelly Cox, 1719 Pacific Ave., Dallas, Secretary.
- Western Surgical Association, Kansas City, Mo., Dec. 11-12.
- Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

Current Medical Literature

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Human Larynx. F. E. Lejeune, New Orleans —p. 95

Modern Management of Organic Lesions of Colon and Rectum F. W. Rankin, Lexington Ky. —p. 98

Inguinal Hernia. R. W. Waldrop, Bessemer —p. 104

American Journal of Diseases of Children, Chicago

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Stone in Urinary Tract in Children. Critical Study of Twenty One Cases. H. L. Kretschmer, Chicago —p. 513

Insensible Perspiration in Children. I. Experimental Procedure and Influence of Certain Factors. G. J. Ginandes and Anne Topper, New York —p. 528

*Sensitivity to Tuberculin at Different Age Periods. C. A. Stewart and R. Dyson, Minneapolis —p. 552

Disturbance of Gastro-Intestinal Innervation in Poliomyelitis. J. A. Toomey, Cleveland —p. 559

Extent and Nature of Decline of Tuberculous Infection in Children. Analysis of Data Concerning 4982 Children Tested with Old Tuberculin During Years from 1926 to 1934 Inclusive. P. W. Beaven, Rochester, N. Y. —p. 565

*Studies in Whooping Cough. Diagnosis and Immunization. Leila Daughtry-Denmark, Atlanta, Ga. —p. 587

Management of Retarded Child. R. L. Jenkins, Chicago —p. 599

Otogenic Suppurative Parotitis in Children. Report of Five Cases. J. M. Adams, Minneapolis —p. 608

Erythrocytes and Hemoglobin of Blood in Infancy and in Childhood. I. Size and Hemoglobin Content of Erythrocytes in Nutritional Anemia. G. M. Guest and Estelle W. Brown, Cincinnati —p. 616

Sensitivity to Tuberculin at Different Age Periods.—According to Stewart and Dyson, Mantoux tests with old tuberculin and purified protein derivative in doses of unequal potency agree in showing that, as a rule, children are more sensitive to tuberculin than adults and that this difference between the two age groups is due to the occurrence among adults of a disproportionately large percentage of patients with relatively small areas of reaction to tuberculin. The suggestion is offered that the difference in allergy observed between the two age groups is the product of a general tendency for sensitiveness to tuberculin to diminish slowly as the postinfection time elapses. The sensitiveness to tuberculin protein induced in the tissues by tuberculous infection is an extremely variable and moderately unstable immunologic change.

Studies in Whooping Cough.—Hematologic studies by Daughtry-Denmark indicate that, with a severe cough, a marked increase in the number of leukocytes with more than 60 per cent lymphocytes indicates whooping cough. However, the absence of such a blood picture by no means excludes the disease, for, although it is not a well known fact, normal leukocyte and differential counts do not disprove the presence of whooping cough. In a series of 240 patients who received Sauer's vaccine, four blood counts being made in each case, there was an increase in lymphocytes. Haemophilus pertussis has agglutinated spontaneously both with normal serum and with the serum of patients with whooping cough. Agglutination has never been complete and the test is worthless in the diagnosis of whooping cough. The pertussis bacillus has not been universally accepted as the etiologic agent. The present investigation has shown that, although hematologic studies are of value only when the results are positive and that agglutination tests are without value, the complement fixation test may be relied on for the early diagnosis of whooping cough, that is, before the whoop develops. Sauer's vaccine was administered to 150 children. Complement fixation was secured one week later in 92 per cent and was complete in 61 per cent.

All those who received as much as 14 cc of vaccine had complete complement fixation. This proves that Sauer's vaccine is effective in producing complete fixation. Thirty-seven children who received Sauer's vaccine in May 1933 were exposed to whooping cough. Seven of these contracted the disease, but in each case it was mild. Seven children who were vaccinated in September 1934 and were exposed to whooping cough remained well. Twenty-eight children in whose blood complete fixation was secured by the use of Sauer's vaccine were directly exposed to whooping cough and did not contract the disease. In several cases the exposure was immediate. This indicates that the vaccine becomes effective as soon as complement fixation is secured, instead of three months after administration, as has been suggested. The author's studies have demonstrated that children who have whooping cough have complete complement fixation during the disease but may have no fixation a few months later. The same condition is true of vaccine. The immunity conferred by vaccination may last as long as that conferred by the disease.

American J. Obstetrics and Gynecology, St. Louis

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Acid Base Balance of Blood During Normal Pregnancy and Puerperium. Margaret Nice, J. W. Mull, E. Muntwyler and V. C. Myers, Cleveland —p. 375

Contribution to Etiology and Treatment of Puerperal Inversion of Uterus. O. A. Gordon Jr., Brooklyn —p. 399

Consideration of Some of the Aspects of Sterility. Evaluation After Ten Years. G. L. Muench, New York —p. 406

*Nonprotein Urea and Rest Nitrogen of Blood During Normal Pregnancy and Puerperium. J. F. Cadden and A. M. Faris, New York —p. 421

*Significance of Fetal Heart Tones in Abnormal Placentae. G. C. Richard, Son, Chicago —p. 429

Cesarean Section in Dysplasia. G. C. Hanna, Philadelphia —p. 452

Benign and Malignant Polyps of Cervix Uteri. C. J. Geiger, Chicago —p. 465

Use of Recently Introduced Ergot Alkaloids in Puerperium. Notes. M. G. DerBrucke, Brooklyn —p. 474

Bant's Disease and Pregnancy. Splenectomy, Delivery of Full Term Living Child Six and One-Half Months Later. C. H. McKenzie, Louisville, Ky. —p. 486

New Rapid Economical Test for Pregnancy and Certain Gynecologic Conditions. G. C. Gilfillen and W. K. Gregg, Dayton, Ohio —p. 498

Ionization Method for Treatment of Endocervicitis. I. Forman, Philadelphia —p. 503

Dermoid Cyst Diagnosed by X-Ray. R. J. Heffernan, Boston —p. 507

Tracheo-Esophageal Fistula and Complete Esophageal Stenosis of the New Born. F. A. Kassebaum and M. J. Schreiber, New York —p. 509

Palpation of Fetal Heartbeat Through Maternal Abdominal Wall. R. J. Griffin, Philadelphia —p. 515

Nonprotein, Urea and Rest Nitrogen During Pregnancy.—According to Cadden and Faris, it is generally agreed that normal pregnancy is accompanied by a decrease in blood urea nitrogen. A survey of the literature, however, reveals great disagreement among various investigators as to absolute figures observed during gestation, reported average values ranging from 68 to 125 mg per hundred cubic centimeters of blood. Before reliance can be placed on any abnormalities found in the urea nitrogen content of the blood, as has been reported in certain of the toxemias of pregnancy, it becomes essential that the normal pregnancy values be established. For accurate estimation of blood urea nitrogen by any method involving the use of urease it is essential that certain factors, such as the hydrogen ion concentration, the type of buffer used and the temperature, be carefully regulated. The authors determined the nonprotein, urea and rest nitrogen in 163 blood specimens obtained from normal pregnant women at different periods of gestation during labor and on the eighth day post partum. They found that the nonprotein nitrogen of the blood decreases during the first six months of pregnancy from the average nonpregnant values of approximately 30 to 24 mg per hundred cubic centimeters of blood. During the last four months of pregnancy the nonprotein nitrogen increases steadily until one week post partum, when it averages 33 mg per hundred cubic centimeters of blood, being about 26 mg at term. The urea nitrogen concentration diminishes during the first six months from the usual nonpregnant value of about 14 mg to a value of 6 mg per hundred cubic centimeters of blood and then maintains a constant level until the eighth, or ninth month, when it begins to rise, having an average value of 7.12 mg at term and 11 mg per hundred cubic centimeters of blood on the eighth day post partum. Owing to the fact

that the nonprotein nitrogen falls and rises more rapidly than the urea nitrogen, the rest nitrogen falls during the first six months of pregnancy to a value of 18.02 mg per hundred cubic centimeters of blood and then increases during the latter part of pregnancy, being 19.18 mg at term. It is further increased during the first week post partum, reaching a value of 21.39 mg on the eighth day of the puerperium. Although it is quite evident that a change in the rest nitrogen is not necessarily accompanied by a change in the urea nitrogen over nonprotein nitrogen ratio, figures show that the urea nitrogen to nonprotein nitrogen ratio is decreased during pregnancy, being 0.25 during the sixth or seventh month and 0.27 at term. The normal nonpregnant value for this ratio is approximately 0.5.

Fetal Heart Tones in Ablatio Placentae—In reviewing cases of ablatio placentae, it would seem to Richardson that the greatest practical value in studying the significance of fetal heart tones would be derived by classifying them in accordance with their degree of separation. Since both extreme and intermediate variables of rate and area separation are represented in these cases, they might be accepted as a standard of future investigation. Taking as a basis a normal case with average fetal heart tones of from 136 to 140 and the placenta completely attached, the separating of from one fourth to one third of the area would lead one to expect the fetal heart tones to be from 160 to 170, while with one half separation and fetal heart tones of from 180 to 190 the time factor considered, the fetus passes from a compensation phase into a phase of asphyxia. When the fetal heart tones decrease with three-fourths separation of placenta from 90 to 70, fetal death will occur before, at or immediately after complete detachment. This process may involve five minutes or five hours and will obviously present some variations, depending on the elapsed time occupied by any phase along this uniform line of events. With this basis one can observe the acceleration of the fetal heart rate and thereby arrive at a diagnosis of the approximate, and usually quite exact, area of placenta that has become separated. Such an evaluation renders the wide application of these figures obvious. To secure all the information obtainable from variations in the fetal heart rate, especially in labor, the rate should be observed at definite and frequent time intervals, say at intervals of fifteen or thirty minutes, making evident the response of the fetal organism to the primary embarrassment of ablatio placentae before other signs of this complication are present, and also before this accident has reached a stage critical to mother or fetus. By securing this earlier information it would be evident that, in by far the greater number of cases, ablatio placentae is not an abrupt process at all but insidious in its course and that it usually presents time for more adequate and satisfactory treatment than is usually given. Earlier diagnosis narrows the differential value between ablatio placentae and placenta praevia.

American Journal of Orthopsychiatry, Menasha, Wis

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- Use of Puppet Shows as Psychotherapeutic Method for Behavior Problems in Children Lauretta Bender and A. G. Woltmann New York.—p 341
- Use of Consultation Method in Case Work Therapy P. Sloane Philadelphia—p 355
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- Role of Forgettery in Education I. S. Wile New York.—p 376
- Attempt to Determine Degree of Antisocial Behavior in Psychopathic Personalities and Its Correlation with Porteus Maze and Binet-Simon Tests J. J. Michaels Boston and Margaret E. Schilling Ann Arbor Mich.—p 397
- Children's Problems Generalized Approach S. E. Jelliffe New York.—p 406
- Some Implicit Common Factors in Diverse Methods of Psychotherapy S. Rosenzweig Worcester Mass.—p 412
- Trends in Social Therapy Elma Olson Evanston Ill.—p 416
- Remedial Reading Methods T. G. Hegge and L. B. Ward Northville Mich.—p 421
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- Some Notes on Sex Mores Among Negro Children A. T. Childers Cincinnati—p 442
- Polysynthetic Extroversion Therapy for Reduction of Catatonic Attacks Case Report L. J. Ljely Bath N. Y.—p 449

Am J Syphilis, Gonorrhea and Ven. Dis, St. Louis

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- Pathology of Aorta in Haitian Treponematosis. C. V. Weller Ann Arbor Mich.—p 467
- *Mapharsen in Treatment of Early Syphilis G. V. Kulchar and C. W. Barnett San Francisco—p 482
- Treatment of Gonorrhea in the Male Discussion of Modern Methods of Treatment W. M. Brunet and S. Seltzer Chicago.—p 487
- Id. Study of 600 Cases of Gonorrhea Treated with Irrigations of Potassium Permanganate and Injections of Silver Proteinat. W. M. Brunet and S. Seltzer Chicago—p 492
- Response of Quantitatively Titered Wassermann Test in Early Syphilis to Treatment with Five Different Arsenical Drugs J. E. Moore, S. M. Hardy H. M. Robinson Baltimore and H. Eagle Philadelphia.—p 503
- *Value of Kline Exclusion Test in Serodiagnosis of Syphilis Results Based on Evaluation of Serodiagnostic Tests for Syphilis in the United States. C. R. Ren New York.—p 515
- Age Distribution of Syphilis Among Indigent Patients Based on Blood Kahn Reactions of 12,115 County Hospital Patients S. E. Gould Eloise Mich.—p 523
- Syphilis in the American Negro H. H. Hazen, Washington D. C.—p 530
- Professor Ernest Finger Today W. Clarke New York.—p 562

Mapharsen in Treatment of Early Syphilis—During the last twenty months Kulchar and Barnett have given 1,270 injections of mapharsen to fifty-six patients with untreated primary or secondary syphilis. Nine were in the seronegative primary stage, eleven in the seropositive primary stage and thirty-six in the secondary stage when treatment was started. The treatment schedule consisted of courses of ten weekly injections of iodobismutol alternating with courses of twelve injections of iodobismutol given twice a week in the first course and once a week in subsequent courses. Standard doses of mapharsen, 60 mg for men and 40 mg for women, were used. The dose of iodobismutol was 2 cc. The rate of disappearance of lesions under mapharsen therapy was observed in twenty cases. In ten patients primary lesions healed in from four to thirty days, the mean being thirteen days. The average time of involution of secondary syphilides in ten patients was the same. This interval corresponds to an average of two injections of mapharsen and is less than the twenty-three days reported by Cannon and Karetitz as the average period of involution using nearsphenamine. Wassermann reactions were done before starting treatment and at the end of each course. From this comparison it appears that the rate of serologic reversal is slower with mapharsen than with arsenphenamine. In thirty patients Wassermann reactions were obtained after the completion of at least twenty injections each of mapharsen and iodobismutol. The final reactions were negative in twenty-five, weakly positive in two, and strongly positive in three. The cerebrospinal fluid was examined in twenty-one patients after at least six months of regular treatment. In fifteen the fluid was normal. Of the six abnormal fluids two were of the group I (cells or protein increased), three of the group II (Wassermann reaction partially positive), and one of the group III type (paretic formula). The patient in whom the group III fluid was found developed clinical signs of early dementia paralytica after receiving one year of regular treatment. Because of the small number of spinal fluids examined, the apparent high incidence of positives (29 per cent) may not be significant. Pruritus, skin eruptions and immediate reactions, including nitritoid crises, were slightly more frequent with nearsphenamine than with mapharsen. All other types of reaction, particularly nausea, vomiting, diarrhea and headache, are more common following mapharsen. Venous thromboses, often severe and extensive, occurred following nearly 1 per cent of the 1,270 injections of mapharsen, while none followed the use of nearsphenamine. Of the thirty-three patients receiving two or more courses of mapharsen, all but four experienced some reaction to the drug. The period of observation is too short and the number of patients too small for a complete clinical appraisal of mapharsen. Serologic fastness and relapse, central nervous system involvement and treatment reactions, however, are evidently not avoided in early syphilis by the use of mapharsen.

Kline Exclusion Test in Diagnosis of Syphilis—Ren asserts that, in the recent evaluation plan for the serodiagnosis of syphilis, the Kline exclusion heated serum test was the most sensitive of all tests in group A (less than 1 per cent false

positive reactions in 468 presumably nonsyphilitic persons) By means of this test more persons with primary and latent syphilis (with varying amounts of treatment) were detected than by any other test (in group A) This is particularly important in the control of syphilis, especially in outpatient departments and clinics and immediately before transfusions to prevent the transmission of syphilis As a secondary consideration, the low cost of materials and the rapidity and ease of performance of the slide tests deserve the highest regard

Anatomical Record, Philadelphia

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- Anatomy of So-called Valves of Umbilical Vessels with Especial Reference to 'Valvulae Hobokeni' Mary Spivack, Chicago—p 127
Histologic Studies on Lipins I Osmic Acid as Microchemical Reagent with Especial Reference to Lipins N L Hoerr Chicago—p 149
*Iron-Hematoxylin-Aniline-Blue Staining Method for Routine Laboratory Use. A. A. Koneff, Berkeley, Calif—p 173
Hormone Stimulation of Spermatogenesis in Testis of Ground Squirrel L J Wells and C R Moore, Chicago—p 181
Studies on Physiology of Lactation V Induction of Lactation in Depancreatized Dogs W O Nelson, H E Himwich and J F Fawcett New Haven, Conn—p 201
Para Intestinalis of Common Bile Duct as Viewed by Older Anatomists (Vesalius, Glisson, Bianchi, Vater, Haller, Santorini etc) E A Boyden, Minneapolis—p 217
Early Development of Thyroid Gland in Dog with Especial Reference to Origin and Position of Accessory Thyroid Tissue Within Thoracic Cavity M C Godwin Ithaca N Y—p 233

Iron Hematoxylin-Aniline-Blue Staining Method—Koneff's method permits the demonstration of most types of tissue simultaneously and with sufficient differentiation to form a judgment of the total histologic make-up of the organ The method will also demonstrate clearly certain pathologic changes The staining procedure may be used after any of the common fixatives Sections are mordanted in 5 per cent aqueous solution of iron and ammonium sulfate (violet crystals) for five to ten minutes, and rinsed quickly in distilled water, and then stained in Harris's hematoxylin for from three to fifteen minutes They are again washed in distilled water and placed in a mixture of 0.1 Gm of aniline blue (Grübler), 2 Gm of oxalic acid, 15 Gm of phosphomolybdic acid and 30 cc of distilled water This solution simultaneously differentiates the hematoxylin and stains with aniline blue Proper nuclear and cytoplasmic differentiation is observed after about fifteen minutes For this purpose the sections are washed in distilled water and examined under the microscope If differentiation and staining are incomplete, the sections are returned to the staining solution for a longer time Tissue that has been stored for a long time in 80 per cent alcohol or as celloidin blocks in glycerin alcohol requires from forty-five to sixty minutes' staining time, while recently fixed material usually requires from fifteen to twenty-five minutes and is then washed in distilled water, differentiated and dehydrated in two changes of absolute alcohol, cleared in xylene and mounted in balsam If euparal is used as the mounting medium, the xylene may be omitted When staining loose celloidin sections, 95 per cent alcohol is substituted for absolute alcohol and the sections are mounted in euparal Clearing in creosote is not necessary unless the sections are mounted in balsam

Annals of Internal Medicine, Lancaster, Pa.

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- Present Status of Pernicious Anemia Experience with 600 Cases Over Eight Years C C Sturgis Ann Arbor Mich—p 283
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Roentgenkymography Its Clinical and Physiologic Value in Study of Heart Disease W G Scott and S Moore, St. Louis—p 306
*Revival of Human Hearts W B Kountz, St. Louis—p 330
*Lymphosarcoma and Hodgkin's Disease Clinical Characteristics S Ginsburg New York—p 337
Prophylactic and Therapeutic Value of Convalescent Serums in Some of Acute Infectious Diseases W Thalheimer New York—p 373
Value of Certain Diagnostic Procedures in Bronchopneumonia Clinical Study J V Fopcano Ann Arbor Mich—p 379
What the Physician Should Know About Dental Problems W J Kerr San Francisco—p 386

Revival of Human Hearts—Kountz points out that the method of perfusion of the heart has not advanced since the days of Langdon, who isolated a heart, inserted a cannula

into the aorta and perfused the coronary vessels by backflow of the perfusing solution through the aorta This method was satisfactory as a means of determining the viability of the heart but would not suffice to keep hearts viable for a period sufficiently long to permit physiologic observation In general the hearts were found to dilate in a short period if the pressure in the aorta was raised sufficiently to permit perfusion of the coronary system Therefore a cannula was constructed that would permit the development of different pressures in the ventricle and in the coronary arteries Cannulas were inserted into the coronary arteries through the aorta A large cannula was then introduced over the coronary ones through the aorta and past the aortic valves Different pressures were maintained in the two systems by individual reservoirs The pressure in the cannulas of the coronary arteries was maintained at about 120 mm of mercury, whereas that in the ventricle was varied according to the contractility of the heart One could thus perfuse hearts for a period or could make heart-lung preparations that would last for several hours The hearts of 127 persons who had died of various conditions have been studied Sixty-five have been revived to the point of ventricular contraction Of these, forty-eight developed regular cardiac mechanism and beat for a period of at least two hours Fifteen heart-lung preparations have been made, and cardiac contractions against a blood pressure of 120 mm of mercury have been maintained for as long as four hours The functions of the other hearts were studied by perfusion of the coronary vessels The time after death and the nature of the disease had definite influence on the viability of the heart The causes of death ranged from heart disease to death by accident In general, in those patients dying from chronic illness revival could as a rule be accomplished more easily than in those succumbing to acute infection The hearts of persons who died of tuberculosis revived more easily than those of any other group whose death was due to a single cause The hearts of children were usually more responsive than those of adults The greatest difficulty was encountered in the hearts of those who had succumbed to diseases of the heart itself Congenitally defective hearts were relatively easy to revive The longer the period after death the greater likelihood there was of thrombosis in blood vessels and the greater the probability of dilatation of the heart when the experiment was started In addition to cutting the bundles, the surface of the heart was electrically stimulated and the localization and nature of extrasystoles were determined Four general types of extrasystoles were observed

Lymphosarcoma and Hodgkin's Disease—Ginsburg says that lymphosarcoma and Hodgkin's disease invade every organ and tissue of the body There are no pathognomonic clinical signs of lymphosarcoma and Hodgkin's disease, hence extraglandular involvement of either disease has frequently been overlooked and mistaken for non-neoplastic conditions Both diseases are characterized by marked invasion, proliferation, replacement and compression of organs and tissues, necrotization, ulceration toxaemia, cachexia and febrile reaction Both diseases may spontaneously run an acute, a subacute or a chronic course The only method of differentiation is on the basis of morphologic microscopic criteria, which are not always conclusive The etiology of lymphosarcoma and Hodgkin's disease is obscure Gordon's claim for a filtrable virus as the cause of Hodgkin's disease still needs confirmation There is no specific method of treatment for either disease Chemotherapy, vaccine and toxin treatment, surgery and irradiation are purely palliative methods which in selected cases, have produced favorable results with freedom from clinical evidence of disease for many months and years Both lymphosarcoma and Hodgkin's disease invade, infiltrate and destroy organs and tissues not only by direct extension but also by lymphogenous and hematogenous metastases as in epithelial cancer, hence early recognition is essential for successful irradiation or any other form of local treatment In doubtful cases in which a biopsy is unobtainable, the radiotherapeutic test may be greatly helpful not only in arriving at a diagnosis but also in relieving the patient The clinical course, the prognosis, the mode of death, the results of chemotherapy, vaccines, toxins, radium, roentgen therapy and surgery as observed in lympho-

sarcoma and in Hodgkin's disease run closely parallel. Hodgkin's disease varies in no fundamental clinical characteristics from lymphosarcoma.

Archives of Internal Medicine, Chicago

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- Clinical Survey of 108 Consecutive Cases of Diabetic Coma. T. W. Baker, Rochester, Minn.—p. 373
- *Syncope and Convulsions Due to Hyperactive Carotid Sinus Reflex. Diagnosis and Treatment. Soma Weiss, R. B. Capps, E. B. Ferris, Jr. and D. Munro, Boston.—p. 407
- Carotid Sinus Nerve in Man. P. C. Bucy, Chicago.—p. 418
- Adrenal Sympathetic Syndrome with Unusual Variations in Cardiac Rhythm. Report of Case. A. M. Burgess, G. W. Waterman and F. B. Cutts, Providence, R. I.—p. 433
- Adrenal Glands. Clinical and Pathologic Study. E. M. Hall and L. Louisa Hemken, Los Angeles.—p. 448
- Etiologic Significance of Streptococci in Epidemic Encephalitis. II. Experiments with Animals and Conclusions. K. L. Burdon, E. W. Thurston, P. L. Varney and J. Bronfenbrenner, St. Louis.—p. 469
- *Purpura Haemorrhagica Following Administration of Neosarsphenamine. Reaction to Neosarsphenamine Compared with Reaction to Mapharsen. E. H. Falconer and N. N. Epstein, San Francisco and G. K. Wever, Stockton, Calif.—p. 495
- Infectious Mononucleosis. Further Studies. C. A. Stuart, Henry Welch, J. Cunningham and A. M. Burgess, Providence, R. I.—p. 512
- Copper and Iron in Human Blood. IV. Normal Children. A. Sachs and V. E. Levine, Omaha, and A. A. Fabian, New York.—p. 523
- Peripheral Vascular Diseases. Review of Some of Recent Literature and Critical Review of Surgical Treatment. G. W. Scupham and G. de Takáts, Chicago.—p. 531

Convulsions Due to Hyperactive Carotid Sinus Reflex

—According to Weiss and his associates, a hyperactive state of the carotid sinus reflex can be responsible for clinical symptoms, including attacks of syncope and convulsions. Syncope and related manifestations result from cardiac slowing, primary depression of the blood pressure or a central reflex to the brain. The mechanism causing the reaction often appears in a mixed form. Spontaneous attacks can be induced by mechanical stimulation of the carotid sinus. Digitalis sensitizes the carotid sinus reflex mechanism. The routine pre-operative administration of this drug, particularly to elderly patients, is not without danger. Various morbid states play a part in sensitizing the carotid sinus reflex, and treatment of the disease, when efficacious, diminishes or abolishes the hypersensitive carotid sinus reaction. Both the vagal and the depressor type of reaction can be controlled by ephedrine and epinephrine. Atropine abolishes the vagal type but has no effect on the depressor type. The cerebral type is not benefited by these drugs. Surgical denervation of the carotid sinus abolishes spontaneous and induced attacks in suitable cases but does not influence any of the unrelated accompanying symptoms.

Hemorrhagic Purpura Following Administration of Neosarsphenamine

—In the syphilis clinic at the University of California since 1924 about 60,000 treatments with arsphenamine have been administered. Falconer and his co-workers found four recorded cases of hemorrhagic purpura. The data on three of the patients, the first observed in 1931 and the other two from 1932 to 1935, constitute the material for their report. These three patients showed two distinct types of sensitivity to neosarsphenamine. The first patient became increasingly sensitive until a crisis occurred in the form of a severe reaction followed by hemorrhagic purpura. He was sensitive in 1931 during the first course of neosarsphenamine treatment, for he recalled at least two occasions when he had mild hemorrhagic manifestations. Apparently no nitritoid reaction preceded the bleeding. The fact that he received no arsenicals and no treatment of any kind for a year did not suffice to abolish the sensitivity, as was evidenced by the severe reaction after the fourth dose of neosarsphenamine in the second series of treatments. The other two patients belong to a group probably small, that present an initial sensitivity to neosarsphenamine. The second patient presented marked hypersensitivity to the drug from the standpoint of a toxic reaction of the platelets and capillaries. This case, and the cases reported by other investigators, illustrate that sensitivity is not dependent on the amount of the drug previously administered. The second patient had not received any arsphenamine previous to Sept. 28, 1933, when she received her first dose of neosarsphenamine. After the second dose of 0.15 Gm purpuric manifestations appeared. She had a nitritoid reaction after each dose. When she reported to the

hematologic clinic one week after receiving the second dose, although the purpuric spots were still well marked, the platelets had returned to a normal number and the bleeding time was normal. The marked sensitivity to neosarsphenamine presents a sharp contrast to the entire lack of any untoward reaction from mapharsen. This applies to both the second and the third patient and certainly suggests that the sensitivity is not to arsenic as such but to some oxidation product not present in mapharsen. The question as to whether mapharsen can be safely used after the occurrence of hemorrhagic purpura is answered in the affirmative by the results in the authors' two cases but requires further observation.

Archives of Pathology, Chicago

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- Further Investigations on Experimental Atherosclerosis. J. W. Jobling and Dorothy R. Meeker, New York.—p. 293
- Human Atherosclerosis in Relation to Cholesterol Content of Blood Serum. K. E. Landé and W. M. Sperry, New York.—p. 301
- Vascularization and Hemorrhage of Intima of Arteriosclerotic Coronary Arteries. J. C. Paterson, Toronto.—p. 313
- *Shock. Definition and Differentiation. V. H. Moon, Philadelphia.—p. 325
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- *Focal and General Tissue Responses to an Avirulent Tubercle Bacillus (BCG). S. R. Rosenthal, Chicago.—p. 348
- Hepatic Changes on Injection of Sodium Dehydrocholate in Cats with Total Bile Stasis. A. Cantarow and H. L. Stewart, Philadelphia.—p. 373

Shock. Definition and Differentiation.—Moon defines shock as a circulatory deficiency, not cardiac or vasomotor in origin, characterized by a decreased volume of blood and cardiac output and by hemoconcentration. Hemoconcentration appears early, is easily determined and is seen in cases of moderate severity before variations in the blood pressure occur. When the syndrome is fully developed, lowered blood pressure and lowered basal metabolism, diminished renal excretion and an increased cardiac rate are associated features. Each of these associated features may occur in conditions other than shock, but their combination with the circulatory deficiency described seems to constitute a definite entity. Shock is simulated clinically by hemorrhage, syncope and rapidly developing cardiac failure. It presents pathologic features resembling those of passive congestion. The circulatory phenomena of shock result from a disparity between the volume of the blood and the capacity of the blood vessels. Any loss of fluid, such as that caused by hemorrhage following trauma or local loss of fluid as in burns, will contribute to this disparity, and its importance will be proportionate to the amount of blood and/or fluid lost. Primary shock is essentially similar to syncope, and it has not been shown that these conditions are accompanied by a decreased volume of blood or by hemoconcentration. Primary shock and syncope appear to be transient vasomotor phenomena in which no qualitative changes occur in the capillary walls or in the blood. Shock simulates exsanguination clinically, while its pathologic features resemble those of passive congestion. The similarity to passive congestion accounts for the failure of pathologists to recognize the visceral changes of shock. In the absence of cardiac disease, the diagnosis of congestive circulatory failure as a cause for death is more accurate than that of congestive heart failure. The visceral engorgement characteristic of shock is not designated accurately either as active congestion or as passive congestion. It seems necessary to formulate a suitable term. "Acute venous congestion" is suggested as appropriate.

Tissue Responses to an Avirulent Tubercle Bacillus (BCG)

—Rosenthal attempts to answer the questions of what the reaction in remote parts of the body is, particularly in the susceptible tissue in the sense of Besredka, when an avirulent organism (BCG) which tends to remain localized is injected, and whether tubercles in various organs develop similarly. An attempt also is made to correlate the humoral and the tissue responses. Following the intracardiac injection of avirulent tubercle bacilli (BCG) there developed not only a specific reaction with tubercle formation in various organs but a generalized histiocytic response manifest most prominently in the septal cells of the lungs, Kupffer cells of the liver, endothelial and reticulum cells of the kidneys and spleen and histiocytes of the

endocardium and epicardium This generalized response of the reticulo-endothelial system is ascribed to submicroscopic forms of the tubercle bacilli (BCG) as shown by cultural studies The formation and regression of the tubercle have been traced The number of bacilli and the organs involved determined to a large extent the proliferative or exudative character of the nodule The infiltration of the tubercle by lymphocytes was associated with the healing of the process The changes in the blood reflected those of the tissues The fate of the bacilli (BCG) differed in the various organs

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Fundamental Factors in Interpretation of Stimuli Influencing Endocrine Glands H Selye and J B Collip Montreal—p 667
*Relation of Basophilic Cells of Human Hypophysis to Blood Pressure A. T Rasmussen Minneapolis—p 673

Modification of Frank-Goldberger Blood Estrogen Test—The method for extracting estrogenic substance from blood that Neustaedter now uses is as follows About 40 cc of blood is transferred from a syringe to a petri dish containing from 30 to 40 Gm of anhydrous disodium sulfate, mixed thoroughly with a glass rod, fanned until the mass has the consistency of fudge, transferred to a mortar and ground to a very fine powder as the mixture dries, then the powder is returned to the petri dish for storage if the procedure must be interrupted at this point If the mixture does not harden, more disodium sulfate is added The red powder is transferred to a 250 cc. Erlenmeyer flask and 100 cc. of ether is added, stoppered tightly with rubber and agitated for twenty minutes in a shaker The flask is rested on a specially constructed board at an angle of 45 degrees to separate the ether from the sludge by sedimentation. The supernatant fluid is decanted and centrifugated The process is repeated twice. The centrifugated ether is evaporated to dryness in an evaporating dish before an electric fan The lipid residue is dissolved in 6 cc of benzene to which 0.6 cc. of olive oil is added The benzene is fanned off The olive oil, which now contains the lipid extract, is sterilized by autoclaving at 15 pounds for fifteen minutes This extract may be kept for several days if rubber stoppered and stored in the dark The extract is injected into mature, castrated female mice in divided doses On the first day three injections are given at intervals of four hours Two injections at the same interval are made on the following day The extract is introduced into the mouse dorsally and subcutaneously Beginning on the third morning, vaginal smears are prepared twice daily for four days The smears are made with a small bent glass tube drawn to a fine tip By means of a rubber bulb, a drop of water is repeatedly injected and reaspirated from the vaginal canal so that a uniform and typical sample of vaginal secretion is secured The specimen is transferred to a clean slide, dried fixed and immersed in aqueous thionin (1 per cent) for one

minute, excess stain is removed with water The vaginal smear is examined for an estrous reaction

Basophilic Cells of Hypophysis and Blood Pressure—Rasmussen considers two types of basophilic cells in the human hypophysis It is reaffirmed that those extending into the nervous lobe are derived from the pars intermedia Tinc torially the posterior lobe basophils are essentially like those found in the anterior lobe A slight difference in color may be obtained sometimes Morphologically, the ones in the posterior lobe do not as a rule attain the size of the basophils of the anterior lobe, nor are they as vacuolated In pituitary basophilism those of the posterior lobe do not show the hyaline changes to the same extent that these changes occur in the basophils of the anterior lobe The relationship of the basophilic cells of the hypophysis to elevated blood pressure is far from proved Several recent observations show no correlation between excessive invasion of basophils into the nervous lobe and eclampsia The trend of the evidence in essential hypertension is in the same direction There are more basophils in both the anterior lobe and the posterior lobe in men than in women The accumulation of basophilic cells in the posterior lobe increases slowly with age and, while blood pressure also tends to rise with age, one is not necessarily the cause of the other Three cases of pituitary basophilism are added to those already described by Crooke, showing the characteristic hyaline change in the cytoplasm of the basophils of the anterior lobe, regardless of whether there was a pituitary adenoma, an adrenal neoplasm or neither The last patient had enough inflammation and edema in the adrenals to account for much, if not all, of the enlargement of these glands These hyaline changes occur only rarely and then only to a slight degree in essential hypertension, eclampsia or other cases of high blood pressure unaccompanied by the other characteristics of pituitary basophilism

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*Occurrence of Virucidal Substances in Patients with Poliomyelitis Bearing on Serum Treatment and Vaccination. P H Harmon and H N Harkins Chicago—p 289
Five Year Review of Anterior Poliomyelitis in the Chicago Area S O Levinson Chicago—p 296

Histologic Changes Following Injections for Cure of Hernia—Rice and Mattson find that fibrous tissue is produced in the human being following the injection of irritating solutions intended for the cure of hernia Such changes are characteristic of an inflammatory reaction in which the production of the connective tissue predominates Solutions that produce less of the exudative reaction seem scientifically more rational Clinical trial has proved the method to be effective in carefully

selected cases, and histologic investigations seem to establish a scientific rationale for the method. At the end of fifteen hours the reaction was mostly exudative. Polymorphonuclear and round cells were found in the exudate. Proliferations of the fixed connective tissue cells appeared on the first day. By the fifth day, most of the polymorphonuclear cells had disappeared. Fibroblasts appeared on the third day. Fibrous tissue was found in dense bundles after fourteen days. At the end of the forty-second day, fibrous tissue was very dense.

Virucidal Substances in Patients with Poliomyelitis.—According to Harmon and Harkins, since poliomyelitis seems to be an exclusive disease of the nasopharynx and nervous system in man, the irregular extraneural migration of virus is thought to explain the irregularity of production of neutralizing antibody. Infection can be blocked by peripheral nerve section or by section of the olfactory tracts. Chemical blockage of infection at the nasopharyngeal port of entry appears to have been demonstrated recently. The latter method may have some value in prophylaxis of the human disease. The specific virus neutralizing substance in poliomyelitis is unique in that a greater number of adults without history of contact or infection possess this substance than do convalescents from the disease. The average concentration of immune substance in normal adults is equal to or greater than that carried by convalescents. The importance of an actual attack of poliomyelitis in the production of this substance is minimized by serologic studies. Convalescent and other specific serum therapy should be continued, as there is no evidence that it is not of value. On the other hand, symptomatic improvement following serum administration is almost universal. There are indications that pre-paralytic poliomyelitis in man is a naturally milder type of the disease than the cases seen after paralysis is present. At present specific vaccination is considered to be too dangerous to be applied to man without careful supervision in a controlled study in non-epidemic months.

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Journal of Allergy, St. Louis

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Skin Hypersensitivity to Molds Attempt to Correlate This with Clinical Allergy R. W. Lamson and E. L. Rogers, Los Angeles—p. 582

Control of Rhus Dermatitis.—During the summer of 1935 Blank and Coca were enabled to make a suitably controlled study of the influence of injections of poison ivy extract on the incidence of ivy dermatitis in the CCC Veterans Camp MC-64, Morristown, N. J. The men spent their active working days in areas which abound with the poison ivy and poison sumac plants, and contacts were unavoidable. The exposed men all working under approximately the same conditions in areas contaminated with ivy and sumac, were to be listed in three groups: (1) to receive four injections at weekly intervals of

0.5 cc. of almond oil containing 10 per cent by volume of acetone and 0.1 per cent of solids extracted from poison ivy leaves with acetone and freed from chlorophyll, (2) to receive four weekly injections of 1 cc. of a similar extract containing 0.66 per cent of the poison ivy solids, and (3) to receive no prophylactic injections. As the men presented themselves with ivy dermatitis they were in rotation to be treated with the two extracts and almond oil with 10 per cent of acetone. The prophylactic and therapeutic injections were begun on June 17, and shortly after this there was a decline in the number of cases and in the number of days lost on account of ivy dermatitis, which continued steadily until the first of August, when the incidence of this condition reached zero. There were no cases in the month of August and only one in September, in a man who had not received any injection of ivy extract. Of the untreated men of the third group, 66½ per cent became affected with ivy dermatitis, whereas among the two treated groups of equally exposed men only 20 per cent and 7 per cent respectively were affected. The percentage of the affected controls corresponds closely with the percentage of adults who have been found by skin test with strong extracts of poison ivy to be sensitive to this plant. It is seen also that protection was established in a greater proportion of the group that received the larger dose than it was in those receiving only one-twelfth that dose.

Use of Blister Fluid for Passive Transfer Test.—Parlato undertook the present study for the purpose of determining whether the fluid contents of burn blisters contained skin sensitizing antibodies and whether they may be comparable to the reagents of artificially produced blisters and those of the blood serum. An attempt was made to determine whether the reagents of the burn blister fluid from a patient having burn blisters could be exhausted. One of the sensitized skin sites of one receptor was given repeated injections of cat epithelium extract. Within two days there occurred a reduction and then a lack of reactivity not only to the 0.001 but also to the 0.01 solution. At this point the site was tested with horse epithelium producing a positive result, indicating that the exhaustibility of the antibodies was specific. After a rest of eleven days, the same site reacted to the cat hair extract 0.01 solution. The work of Spain and Newell on the reagent content of artificially produced blister fluid has been confirmed. In some carefully selected cases, the artificial blister fluid could be used for performing the Prausnitz-Küstner test.

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Biologic Assay of International Standard Estrin and Certain Commercial Preparations F E D Amour and R G Gustavson, Denver—p 472.

Role of Potassium in Epinephrine Action—After reviewing the earlier literature on this subject Camp and Higgins present a further analysis of this action of potassium. They made experiments on more than 100 dogs. On the basis of these studies they reach the following conclusions: 1 Potassium effects all the changes in the systems studied that are produced by epinephrine. 2 Potassium action is obtained after decerebration, bilateral adrenalectomy, atropine and ergotoxine. 3 Potassium is responsible for the typical changes ascribed to epinephrine. 4 Potassium is liberated from the heart by vagus stimulation. 5 One of the functions of the adrenal glands is to maintain a constant distribution of potassium.

Minnesota Medicine, St. Paul

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*End Results of Treatment of Urinary Infections by Ketogenic Diet. H A Buchtel and E N Cook, Rochester Minn—p 603

Treatment of Urinary Infections by Ketogenic Diet—Buchtel and Cook have recently sent questionnaires to 200 patients who had been dismissed from the clinic a year or more previously with sterile urine following treatment by means of the ketogenic diet. The average length of time since dismissal in these cases was two years. They chose patients consecutively from two groups, one group made up of patients who had been treated in 1931 and 1932, and the other made up of patients treated in the last months of 1933 and early months of 1934. This was done to see whether the changes made in the management of the diet made any difference in the end results. Patients in the first group had been kept on the diet longer, usually from three to four weeks, whereas those in the latter group had been kept on the diet usually only until two sterile cultures of the urine were obtained on successive days. In addition, the diet used in the latter group of cases contained a higher ratio of fatty acid to dextrose. Of the 161 replies received there was recurrence of the bacillary infections in only forty-two instances. Once recurrence has developed, use of the ketogenic diet at home has a definite place in the treatment. Patients can follow the diet at home quite well, especially if it has previously been followed under supervision. A ketogenic

diet for home use that has been quite successful has a 4:1 ketogenic-antiketogenic ratio, which is the same as is used now at the clinic. It can be prepared and followed quite easily and has proved to be an adequate means of treatment. Fourteen of the forty-two patients who suffered from recurrence of urinary infection followed this home diet. All reported benefit. Three said they were cured, eight that they were markedly benefited and three reported moderate relief of symptoms. Two additional patients reported control of their symptoms by the use of acidifying drugs alone.

South Carolina Medical Assn. Journal, Greenville

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*Midline Cerebellar Tumors (Medulloblastoma) Clinicopathologic Report of Cases Showing Diffuse Dissemination Throughout Central Nervous System N W Winkelman Philadelphia and J L Eckel Buffalo—p 372
Portal Thrombosis Following Splenectomy for Splenic Anemia S W Moore, New York—p 382
Surgical Management of Prolapse of Uterus and Vagina L E Phaneuf Boston—p 383

Juvenile Tuberculosis of Kidney—Mathe emphasizes the importance of suspecting tuberculosis of the kidney in children presenting chronic cystitis, persistent pyuria and relapsing pyelitis. It occurs in infants, children and adolescents more frequently than it is believed. In fact, many patients with adult renal tuberculosis had earlier silent tuberculous lesions of the kidney in childhood which escaped attention. But with more widespread interest in urology in children and by a careful systematic routine urologic study of suspected cases, made possible by the use of the more recently perfected smaller caliber child cystoscopes, diagnosis will be made in more cases and the patients will be given the same chance for the surgical relief that has been carried out so successfully in adults. Six cases of unilateral juvenile renal tuberculosis occurring in children and adolescents are reported. The group comprises 10.3 per cent of fifty-eight patients in whom nephrectomy was performed for tuberculosis. Four are living and well eight years, six years, eleven months and three months after operation. In reviewing 4,698 cases of unilateral renal tuberculosis the author found that this disease occurred in 565 subjects (12 per cent) aged from 1 to 20 years and that 0.42 per cent (twenty cases) occurred in infants aged from 1 to 5 years. 1.08 per cent (fifty-one cases) occurred in children aged from 5 to 10 years and 10.5 per cent (494 cases) occurred in adolescents aged from 10 to 20 years. The necropsy statistics show that the incidence is much higher (from 25 to 30 per cent)

Although clinical quiescence and autonephrectomy have been overenthusiastically hailed as spontaneous healing of renal tuberculosis, nephrectomy is the treatment of choice in the unilateral type in children as well as in adults and, if this operation is performed early enough, it is followed by a great percentage of cures.

Dextrose Tolerance as Diagnostic Aid in Jaundice—Jacobi believes that any case of jaundice in which after the administration of 100 Gm of dextrose orally there is a flat or an early high rise with a subsequent normal or fasting level blood sugar curve, the principal feature of which is the return of the blood sugar to a normal fasting level at the end of the two hour period denotes a jaundice of toxic origin. In such cases operative intervention will be of no value and may add considerably to the already existing liver damage. Any case of jaundice in which, after the administration of 100 Gm of dextrose orally, there are sugar curves the principal feature of which is the failure of the blood sugar level at the end of the two hour period to return to the normal level, indicates that the case is due either to some obstructive lesion of the common duct, such as stricture, calculus, suppuration or carcinoma or to some such liver involvement as cirrhosis, abscess or carcinoma. As a rule other factors both clinical and laboratory help materially in further clarifying the situation. It is in this type of case of jaundice that early operation is definitely indicated with the most satisfactory results obtained, of course, in cases due to calculus obstruction. Obstructive jaundice produced by carcinoma of the head of the pancreas or of the common duct certainly calls for the performance of a cholecystectomy as an indicated palliative procedure. Cases of liver abscess with jaundice also give this obstructive curve. In the jaundice due to cirrhosis and carcinoma of the liver, the outlook is so hopeless, especially in the latter, that not much in the way of damage can be added to an already hopeless situation, even the performing of a laparotomy.

Acute Conditions of Gallbladder—In reviewing the varied pathologic lesions found in 129 cases in which the diagnosis was gallbladder or biliary duct disease, it became apparent to Taylor that they should not all be classified under the single heading of acute conditions of the gallbladder. The principal lesion in most of these cases is vascular, from an occlusion or partial occlusion of the venous return from this viscus. Infection plays a secondary part or, in many cases, may be completely absent. This feature contrasts sharply with the usual lesion of acute appendicitis in which the reverse is true. The 129 cases have been grouped according to morphologic observations in the gallbladder as acute edematous, acute suppurative and acute gangrenous. In analyzing the signs and symptoms of patients from these separate groups, it was found that there was no definite criterion by which they could be differentiated. There was a marked overlapping of signs and symptoms of patients with the acute edematous type, from which no complications might be expected, with the other two more serious groups. But one aid in making this differentiation was noted the white blood cell count. This in general, varied directly with the severity of the lesion. However it was mis-leading and bore no relation to the pathologic condition in more than 10 per cent of the cases. The clinical features of the disease often bear no relation to the severity of the pathologic process. The mortality for the entire series was 16.3 per cent. Patients operated on the first four days after acute onset gave a mortality of approximately 5 per cent. Of those operated on five or more days after onset, 23.8 per cent died. The perforating and gangrenous lesions have a higher incidence in those of advanced years. Therefore, age is no excuse for delaying operation. More than half the cases may be expected not to improve or become worse while being observed in the hospital. No case is so urgent that preoperative administration of adequate amounts of dextrose solution can be neglected. It would seem best to remove an occasional edematous gallbladder in the doubtful case, rather than run the risk of the more radical policy of watchful waiting.

Midline Cerebellar Tumors ("Medulloblastoma")—Winkelman and Eckel report three unusual cases of midline cerebellar tumor with dissemination through the spinal fluid. In the first case the patient had a definite remission for a period of nearly two years after decompression and high voltage

roentgen therapy. There gradually developed the signs and symptoms of local recurrence and progression, as well as diffuse involvement of the central nervous system. At necropsy there was marked distention of the fourth ventricle by the tumor with invasion into the surrounding structures, and complete filling up of the entire cerebral ventricular and subarachnoid spaces by the tumor tissue. Secondary invasions into the adjacent cerebral tissue were noted throughout. In the second case complete extirpation of the local cerebellar lesion had been done two years prior to the onset of a peculiar picture of spinal cord disease with root involvement. Necropsy showed marked overfilling of the spinal subarachnoid space with tumor cells of the medulloblastic type with invasion into the spinal cord substance. The spinal cord itself was enlarged to nearly five times its usual diameter. Loosening of tissue cells and dropping into the spinal subarachnoid space were probably the beginnings of the new growth within the spinal cord. In the third case the clinical course was typical. Local recurrence was present with complete distention of the fourth ventricle and invasion into adjacent structures. Here again the distended spinal subarachnoid space was filled with tumor tissue with invasion into spinal cord substance at various points. Compression of the spinal cord was present in addition. Scattering of tumor cells into the subarachnoid space as the result of operative manipulation probably accounts for much of the wide dissemination that occurs within the subarachnoid space, and especially within the spinal canal. Cure of the local lesion in medulloblastoma is not sufficient to eradicate the tumor cells completely from the central nervous system. Care must be taken not to loosen portions of the tumor and permit them to drop into the subarachnoid space.

Virginia Medical Monthly, Richmond 63: 329-394 (Sept.) 1936

- Hemorrhage in Pulmonary Disease Elizabeth C Cole Norfolk.—p. 329
Diagnosis and Treatment of Hemorrhage from Gastric Intestinal Tract.
F C Rinker Norfolk.—p. 332
Hemorrhage from Urinary Tract C J Devine, Norfolk.—p. 334
The Problem of Uterine Hemorrhage in Gynecology E Lowenberg Norfolk.—p. 337
Gonadotropic Factors and Sex Hormones M Ehrenstein Charlottesville.—p. 341
Anencephalus—Exhibit of Four Fetuses—with Case Reports W K Lloyd Christiansburg.—p. 349
Optic Retrobulbar Neuritis of Nasal Origin C M Miller Richmond.—p. 351
Fractures of Hip M H Todd Norfolk.—p. 353
Nonunion of Fractures of Humerus D M Faulkner Richmond.—p. 355
Congenital Absence of Right Fallopian Tube and Ovary W P Burton and W J Ellis Covington.—p. 359
Social Significance of Syphilis E S Williams Richmond.—p. 360
Practical Measures for Detecting Cases of Syphilis E E Barksdale, Danville.—p. 364
Syphilis and Gonorrhea as Major Public Health Problems R A Vonderlehr Washington D C.—p. 366
Air Embolism and Pleural Shock D L Anderson Catawba Sanatorium.—p. 371
Simple Method for Infant Feeding Well Adapted to Rural Districts J H Hiden Pungoteague.—p. 375

Simple Method for Infant Feeding—In his search for a common-sense way of treating the great majority of babies in the summer months that can easily be handled by the average family physician and can be carried out by the average mother in moderate financial circumstances, it occurred to Hiden that about half of the whole world lived almost entirely on rice and that ages on ages in the world's experience had definitely proved that rice as a food was especially well adapted to the people who lived in the hot climates of the world. Therefore he selected condensed milk, added to it the required amount of boiled water to make it the right strength for any given infant and added to this one fourth of its quantity of boiled rice in the form of a thin gruel about as thick as cream. The quantity of this mixture for each feeding is regulated to suit the age and weight of the infant. This makes a practically sterile diet, easily digested highly nutritious and sufficiently balanced to meet the requirements in the great majority of cases. In addition to this diet the child is allowed a little orange juice two or three times a day. When oranges cannot be secured a little tomato juice may be substituted. For the last twenty years the diet has given the author far better results than any other method of infant feeding that he has ever tried.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London
48: 399-472 (Aug-Sept) 1936

*Lymphogranulomatosis Benigna in Light of Prolonged Clinical Observations and Autopsy Findings. J. Schaumann—p. 399

Necropsy in Benign Lymphogranulomatosis—Schaumann gives detailed reports of four necropsies in cases of the disease. Three of them had been thoroughly studied clinically. In the fourth the diagnosis was arrived at subsequent to death. The observations show the genetic identity of lupus pernio, Boeck's nodular and Boeck's disseminated miliary sarcoid type, and likewise the occurrence of the disease without skin manifestations. The dermatologic diagnosis in case 1 was lupus pernio, in case 2 disseminated miliary sarcoids (isolated or grouped in arcs and rings) and in case 3 Boeck's nodular sarcoid transformed into lupus pernio, and in all three cases there was found to be present benign lymphogranulomatosis. In case 4 there were no skin lesions, benign lymphogranulomatosis was an accidental discovery in the necropsy on a patient who had died of influenza. The author believes that benign lymphogranulomatosis is a generalized disease with predilection for the lymphohematopoietic apparatus, without or with skin manifestations, and that the disease is probably tuberculous. The disease may cause death in its character as benign lymphogranulomatosis, as a result of the advanced destruction of the hematopoietic apparatus, owing to its localization in vital organs or to cardiac asthenia caused by the increased resistance which the pulmonary lesions offer to the work of the heart. The most usual cause of death is possibly a classic tuberculosis arising in the course of benign lymphogranulomatosis.

British Journal of Physical Medicine, London

11 81-100 (Sept) 1936

Manipulation in Spinal Curvatures. E. Cyriax—p. 83
Physical Treatment of Industrial Injuries. J. Williamson—p. 86
Thermionic Valve as Generator of H F Currents. B. D. H. Watters—p. 88
Physical Therapy of Rheumatic Diseases. L. de Pap—p. 90

British Journal of Radiology, London

9 559-630 (Sept) 1936

Complications of Posterior Gastrojejunostomy. S. C. Shanks—p. 559
Photographic Action of X Rays. G. E. Bell—p. 578
Factor of Importance in Radiosensitivity of Tumors. J. C. Mottram—p. 606
Some Technical Points in Dental Radiography. S. Colyer—p. 615
Action of Gamma Rays on Nerve Cells of Auerbach's and Meissner's Plexus. Note. H. A. Colwell and R. J. Gladstone—p. 620

Radiosensitivity of Tumors—Mottram avers that cells forming the margins of carcinomatous cell masses are more sensitive to gamma radiation than the central cells. A reasonable explanation for this is that the marginal cells have a more abundant oxygen supply, being near the blood vessels, and are for this reason more radiosensitive, since cells under anaerobiosis are radioresistant. If this be the case, carcinomas having small masses of cells should be more radiosensitive than those with large masses of cells. This deduction is considered, and evidence in its favor discovered. The question of the importance of the macrophage reaction to be seen in tumors regressing after irradiation is discussed, and it is concluded that they play no more important part than the phagocytosis of cells killed by radiation. Repeated doses of radiation should be spaced so as always to catch the tumor in a radiosensitive state, and irradiation should be withheld during times of radioresistance, following previous irradiation. The growth of tumors will supply a measure of their radiosensitivity during life, growth corresponding with sensitivity, and regression with resistance.

Action of Gamma Rays on Auerbach's Plexus—Colwell and Gladstone applied a composite radium applicator made up of several containers, to the abdomen of young rats narcotized with ether and urethane for two hours. Four of the tubes, each containing 13.3 mg of radium element, had a wall thickness of 1 mm. of platinum; the wall thickness of the rest (five) was 0.5 mm of platinum. The total radium content

of the applicator was 123.2 mg of radium element. At the end of the exposure the rat was given a subcutaneous injection of physiologic solution of sodium chloride and replaced in its cage. A control rat was similarly narcotized and given the physiologic solution. Twenty-four hours later the animals were killed with ether, and when the abdomen was opened the intestine of the irradiated animal was found to be swollen and the peritoneal surface reddened. Portions of the intestine were removed, placed in Bouin's fluid and, after the usual preliminaries, sections were stained in hematoxylin and eosin. Specimens from the intestine of the control animal (which appeared normal) were similarly treated for comparison. The condition of the nerve cells in the control specimens was, like that of the secretory epithelium and other tissues, quite good. In the irradiated specimens the ganglion cells are unequally or feebly stained, the outlines of the cell bodies are irregular and the granules ill defined or absent. The cell body is frequently shrunken and surrounded by a clear space. The nucleus is often irregular in outline and feebly stained. The nucleolus is often reduced to an irregular speck or may have disappeared completely, and the chromatic material is often broken down into minute granules or appears to have undergone solution. The majority of the nerve cells appear to be irreparably damaged. With the dosage employed, the nerve cells of the intrinsic sympathetic nervous system of the small and large intestine are extensively and badly damaged. Though a few cells seem to have escaped, the general destructive effects due to the irradiation are evident in the nerve cells as well as in the intestinal epithelium, lymphoid tissue, vascular system and unstriated muscle.

British Medical Journal, London

2 413-448 (Aug 29) 1936

Scope of Teaching and Research in Anatomy. W. E. Le G. Clark—p. 413
Use and Abuse of Manipulative Surgery. A. S. B. Bankart—p. 416
Treatment of Chronic Rheumatism. H. L. Tidy—p. 418
Factors Predisposing to Respiratory Disease in Preschool Child. A. D. Bell—p. 420
*Leptospiiral Jaundice Following Bathing Injury. J. D. Lendrum—p. 423

2 449-522 (Sept 5) 1936

Examinations as Path to Freedom. C. M. Wilson—p. 449

Leptospiiral Jaundice, Following Bathing Injury—Lendrum reports a severe case of icterohemorrhagic spirochetosis. The disease was reproduced with typical lesions in guinea-pigs from two separate specimens of urine and from infected guinea-pig tissue. The typical guinea-pig lesions leave no doubt as to the diagnosis. In sections made from the infected guinea-pigs, several suggestive fields were seen in the liver, kidneys and lungs but could not be definitely identified. The source of infection appeared to be from the canal mud through the skin by means of the break caused by a splinter, the skin being an accepted port of entry. The patient always entered the water by diving. The patient, questioned afterward, was positive that he had never swallowed any of the water and stated that he had bathed in the same canal, at about the same site, on many previous occasions, the only difference on this occasion being that the splinter entered his foot. If the skin is accepted as the port of entry, the incubation period of the present case was only two days. The disease was typical. There was the sudden onset of headache, limb pains, vomiting and fever, followed by "red eyes" and jaundice, with an associated pyelonephritis. There was no herpes or sore throat. The pains of the limbs were distressing, they came at first in spasms and later whenever he was touched. He was unable to move his legs at one time, and the tendon reflexes were a long time in returning. The first symptom of relapse was on the seventeenth day. There was a return of all symptoms, pain being referred to the back rather than to the limbs, but there was no increase of jaundice. Albuminuria was present from admission until the forty-ninth day, except on the fifteenth, sixteenth and seventeenth days, just before the relapse, on which three days the urine was alkaline. Pleurisy developed on the eleventh day. Neutralization of the urine when looking for leptospirae is advocated by Morgan and Brown. Successful guinea-pig inoculations were performed, first with a urine which had been neutral in the twenty-four hour specimen immediately preceding, and the second with an alkaline urine. All

other urine inoculations were unsuccessful and were with an acid urine. The administration of potassium citrate or some such preparation is necessary if successful inoculations are to be made from urine. There was a progressive anemia up to the twenty-fifth day. The hemoglobin descended to 42. No high blood ureas were recorded. The highest figures were 48 mg per hundred cubic centimeters on the fifteenth day, and 50 mg during the relapse. The nephritis appears to leave no permanent effects. The boy is well and working at present. The mercury bichloride sulfosalicylic acid test for tuberculous meningitis appears to be not infallible, as a positive result was obtained from both specimens of cerebrospinal fluid examined.

East African Medical Journal, Nairobi

13 129 162 (Aug.) 1936

- Schistosomal Cirrhosis and Splenomegaly in Central Kavirondo District of Kenya Colony E. A. Trim—p 130
 Tick Typhus in Eastern Province of Uganda. Note L. J. A. Loewenthal—p 141
 Benign Tertian Malaria Associated with Urticaria. Unusual or Obscure Case J. R. Davies—p 146
 Abortus Fever. Case O. E. S. Lubulwa—p 148

Edinburgh Medical Journal

43 545 608 (Sept.) 1936

- *Spondylolisthesis. Description of New Method of Operative Treatment and Notes of Ten Cases W. Mercer—p 545
 Some Modern Problems Connected with Cerebrospinal Fluid J. G. Greenfield—p 573
 Causation Pathology and Therapeutics of Electric Injuries S. Jellinek—p 587
 Neglected Aspect of Medical Education H. S. D. Garven—p 593

Spondylolisthesis—Mercer asserts that, in spondylolisthesis, effective treatment is entirely mechanical, since the symptoms are due to a vertebral displacement which is producing overstretching and undue tension of the ligaments surrounding the vertebrae. The author places the patient on his back and raises the table at its lower end to produce an exaggerated Trendelenburg position. A long midline incision is made to just above the umbilicus. The abdominal contents are packed off from the area of operation, and a self-retaining retractor is inserted. The subluxated vertebra is inspected and its relation to the iliac vessels is ascertained. The gap between the sacrum and the slipping vertebral body is exposed by dividing the posterior peritoneum over it and ligating some small veins and the middle sacral artery, and freed of overlying fatty fibrous tissue with a gauze swab. An osteotome is driven in an anteroposterior direction into the lower margin of the fifth lumbar vertebra an eighth of an inch from its lower edge, and into the upper margin of the sacrum an eighth of an inch from its upper edge, producing a rectangular hole after the pieces of bone and the intervertebral disk have been removed. Autogenous bone grafts are taken from the crest of the ilium to wedge into this gap. The grafts are hammered tight into the gap between the sacrum and the fifth lumbar vertebra. To avoid springing out of the wedges, in addition to screwing the grafts in the operation is usually carried out with the patient in a posterior plaster shell. The patient remains in the shell for four months and then lies free from restraint in bed for another month. Thereafter he is allowed up in a Goldthwaite brace.

Glasgow Medical Journal

8 49 146 (Aug.) 1936

- *Diagnosis and Treatment of Bone Sarcoma. W. B. Coley—p 49
 Disease of the Antrum of Highmore Operated on by Caldwell Luc Radical Operation. Review of One Hundred Consecutive Cases W. S. Syme—p 87

Diagnosis and Treatment of Bone Sarcoma—Coley points out that bone sarcoma has a predilection for youth and that the majority of cases occur between the ages of 15 and 30 years. The first symptom of bone sarcoma is usually pain and in the majority of cases pain is noticed some weeks or months before a swelling or a tumor is discovered. In a few cases of acute traumatic malignancy the sarcomatous tumor may begin to develop within a week or less but these cases are rare. The pain is apt to be worse at night, and in spite of occasional short remissions it usually increases steadily in severity. Continued pain in a bone that cannot be explained should always

call for roentgen examination. In the majority of malignant bone tumors, especially of the osteogenic type, the site of origin is one of the extremities. The joint is rarely involved in the early stages. The best explanation of this localization of bone sarcoma would seem to be that sarcoma is most likely to develop at those points which are most subject to trauma or strain. There is probably no bone in the body more likely to be injured than is the knee, hence the highest percentage of bone sarcomas develop in the femur, the most of these in the lower end, about the knee. In discussing the physical signs of bone sarcoma, the author says that a dilatation of the cutaneous veins nearly always occurs in sarcoma, but not in the early stages. Other factors to be regarded are the consistency, location, size and temperature of the tumor. After discussing the roentgen diagnosis and biopsy, particularly the dangers of the latter, the author shows that surgical treatment alone or combined with Coley's toxins is superior to irradiation. He takes up the therapeutic value of Coley's toxins (the toxins of erysipelas and *Bacillus prodigiosus*). He relates how he arrived at this method of treatment and cites the results that were obtained with the administration of the toxins of erysipelas and *Bacillus prodigiosus*.

Guy's Hospital Reports, London

86:249 376 (July) 1936

- The Hunterian Oration on John Hunter to John Hilton. C. H. Fagge—p 249
 Influenza R. E. Smith—p 269
 Etiology of Cancer of Stomach. I. Factors Involved in Varying Incidence in Different Classes and Different Countries. G. A. M. Lintott—p 293
 Id. II. Comparison of Diet and Dental Conditions of the English and the Dutch with Especial Reference to Gastric Irritants. W. E. Herbert and J. S. Bruke—p 301
 Relation of Pulpless Teeth to General Disease with Especial Reference to Periapical Rarefaction. A. Bulleid—p 309
 Recurrent Swelling of Parotids. Two Cases. R. S. B. Pearson—p 333
 Leukemia Simulating Acute Rheumatism and Still's Disease. Case. E. T. Conybeare—p 343
 Laryngeal Vertigo Syndrome. H. Barber—p 350
 Acute Peritoneal Irritation. Cases Showing Paths Taken by Fluids in Peritoneum. C. G. Pantin—p 354
 Epituberculosis with Terminal Tuberculous Meningitis with Post mortem Findings. Case. H. C. Cameron and S. De Navasquez—p 366

Indian Medical Gazette, Calcutta

71:437 500 (Aug.) 1936

- Experimental Infection of Dogs with *Dracontiasis*. V. N. Moorthy and W. C. Sweet—p 437
 Studies on Action of Antimalarial Remedies on Monkey Malaria. Relation Between Concentration of Atabrine in Circulating Blood and Parasite Count. R. N. Chopra, S. K. Ganguly and A. C. Roy—p 443
 Intra Uterine Vaccinia in Pregnant Animals. G. H. Blaker—p 446
 Cholera and Intestinal Helminths. P. A. Maplestone and V. N. Bhaduri—p 449
 *Simple Method of Bronchoradiography. R. Viswanathan and P. Kesavaswamy—p 450
 Study of One Hundred Cases of Dermatitis. P. A. Maplestone and L. M. Ghosh—p 451
 Description of Old Type of Privy. N. G. Pandalar—p 458
 Village Mosquito Trap. R. N. Gore—p 460

Simple Method of Bronchoradiography—Since August 1935, when their attention was drawn to the article by Forester and Leroux describing the new pernasal method of administering iodized poppy-seed oil for visualizing the bronchial tree, Viswanathan and Kesavaswamy have adopted this method in a modified form in sixty cases with satisfactory results. They were successful in all the cases except in one, in which the patient swallowed the whole quantity of the iodized oil, not allowing a drop to go into the bronchi. The method consists in the oil and previously to it the anesthetic being injected directly into one nostril with an ordinary glass syringe exclusive of any tip or catheter of any sort. The paraphernalia concomitant with an operation are no longer required, as is the case when the cricothyroid route is chosen for the injection. Only a 20 cc. syringe and a 2 cc syringe, both without needles a piece of gauze and 1 per cent cocaine solution are required. There is no danger of injecting the oil into the cellular tissues nor is there any fear of breaking needles inside the trachea. The patient may swallow the iodized oil in which case a stomach wash may be needed.

Lancet, London

2: 413-474 (Aug 22) 1936

- Lung Abscess J Maxwell—p 413
Treatment of Severe Diabetes in Children with Protamine Insulinate
T I Bennett and A M Gill—p 416
Treatment of Lymphadenoma with Sensitized Vaccine of Elementary
Bodies E C Warner—p 417
Thrombophlebitis in Obstetrics and Gynecology S K Westmann—
p 421
Results of Operative Treatment in Carcinoma of Breast W H G
Jessop—p 424
Sterile Mating V B Green Armytage—p 426

Treatment of Lymphadenoma with Vaccine of Elementary Bodies—Warner points out that in a previous paper Gordon summarized the experimental evidence which strongly suggests that the "elementary bodies" which he has isolated are the causal agents of lymphadenoma. To establish this beyond doubt is at present impossible. Since the human species is the only one known to be infected with lymphadenoma, it is of interest to see how far, in the present state of knowledge, cases of lymphadenoma can be treated with a serum or vaccine prepared from these elementary bodies. For the past three years, work has been proceeding in collaboration with Gordon to test the value of his sensitized vaccine as a curative agent. The clinical material used has been subject to a careful scrutiny to ensure a correct diagnosis. The criteria to be fulfilled to ensure this have been 1 From a clinical standpoint, fairly typical cases, with lymphatic glandular enlargement, often pyrexia, and a blood count compatible with the diagnosis. 2 A histologic picture showing the changes characteristic of lymphadenoma. 3 A positive result to Gordon's intracerebral inoculation method. This test, when applied to lymphatic glands, is now becoming widely recognized as valuable proof of lymphadenoma, as a characteristic syndrome is produced in the rabbits. In discussing the effects of the vaccine the author cites several cases and says that the doses of the sensitized vaccine should be determined on the patient's reactions to them. In acute or recent cases the most satisfactory initial dose seems to be from 0.05 to 0.1 cc. of one twenty-thousandth vaccine, and depending on the amount of reaction obtained, this is either repeated or increased to from 0.1 to 0.2 cc. at the end of five, six or seven days. In any patient with pyrexia, or recent pyrexia, probably owing to the impossibility of obtaining complete sensitization of the elementary bodies in the vaccine, there is a maximal dosage which should rarely be exceeded. This varies in individual cases, but it is probably unwise to exceed a dose of 1 cc. in children or 2 cc. in adults. The optimal dose may be repeated weekly for long periods. In chronic cases an initial dose of 0.25 cc. is usually safe, and this may be increased usually by 0.25 cc. at the same intervals of time. If the vaccine is given early in cases which are not too advanced, the symptoms are greatly benefited.

Sterile Mating—Green-Armtytage considers the following necessary in an investigation in every case of sterile mating: (1) a complete medical history of the life and habits of both husband and wife, (2) a complete physical examination of both parties, (3) an expert examination of the semen, (4) a pH test of the reaction of the vagina and an investigation of the cervix, (5) a demonstration, preferably by roentgenogram, of patency of the tubes, and (6) an investigation of the premenstrual endometrium and endocrine factors. In discussing the examination of the male, the author stresses the importance of repeated examinations of the semen. He says that genital hypoplasia is by far the commonest single cause of primary sterility in women. It was responsible for 44 per cent of cases in his published series. Perhaps the most constant feature, however, is delayed onset of menstruation which later is irregular, painful or scanty. In women with this history, abortion is common. Treatment is disappointing, for it is not the ovary that is at fault but the anterior pituitary gland. In some cases the author found thyroid gland and calcium useful, but there seems little doubt that in the future, gonadotropic substances containing active anterior pituitary hormone will be the recognized means of treatment. After discussing the pH of the vaginal secretion, the author gives his attention to tubal occlusion. Twelve years' experience with Rubin's insufflation test and salpingograms with iodized oil has confirmed the author's view of the rarity of sterility due to occlusion and has also convinced him that the salpingogram has much more

therapeutic and diagnostic value than insufflation. If obstruction is at the isthmus, operations, however careful are almost always useless, but if it is in the ampullary or fimbriated portion, there is at least a 20 per cent chance of success. Lastly the visible and invisible pattern of the endocrine glands must be considered. The sedentary city worker and many young women with menstrual irregularities have a low basal metabolic rate with subthyroidism, probably dietetic in origin. It is perhaps significant that the adoption of an infant, with its release of maternal feelings, is often sufficient to stimulate normal function and so cause conception. There is evidence, however, that certain women menstruate regularly, but without ovulation. In these cases the secretory or premenstrual phase, dependent on the hormone progesterin secreted by the corpus luteum, is absent. The treatment of this anovular menstruation is promising. The author gives four intramuscular injections of 100,000 units of theelin during the first two weeks of the cycle and three injections of gonadotropic substance of pregnancy urine (100 rat units) during the last ten days, beginning on the seventeenth day.

Medical Journal of Australia, Sydney

2: 171-202 (Aug 8) 1936

- Nonspecific Therapy and Vegetative Regulation of Body C S Hicks—p 171
Binasal Hemianopia Report of Three Cases L Duncan—p 179
Role of the Ophthalmologist in Localization of Cerebral Tumors J B Hamilton—p 183

Practitioner, London

137: 129-256 (Aug) 1936

- Some Late Effects of Venereal Diseases L W Harrison—p 129
Diagnosis and Treatment of Acute or Early Syphilis E T Burke—p 141
Diagnosis and Treatment of Local Complications of Gonorrhea in the Male V E Lloyd—p 152
Gonorrhea in Women Margaret Rorke—p 163
Virus Diseases of External Genitals and Chancroid R Lees—p 177
Venereal Disease in Children F R Curtis—p 186
Cancer of Rectum C Gordon Watson—p 197
Further Examples of Misuse of Common Remedies J W Linnell and C Hoyle—p 209
Syringing the Ear C Keogh—p 214
Acute Aseptic Meningitis C A Birch—p 219
Diagnosis of Difficult Cases by Psychologic Methods S B Hall—p 225
General Practice No II Choosing a Practice I G Briggs—p 235

Gonorrhea in Women—Rorke states that, before one considers the discharge of a patient after treatment for gonorrhea, the films and cultures should be negative after three succeeding menstrual periods. She must also be free from signs or symptoms of gonorrhea and must have been off treatment for three or four weeks wholly before final testing after a provocative. The best provocative is alcohol—gin or other spirit taken the night before the films and cultures are taken in the morning. The local congestion resulting from the use of alcohol will astonish many practitioners. If this provocative is not possible, painting the urethra and cervix with 25 per cent strong protein silver and taking films and cultures thirty-six hours later make quite a fair provocative. The blood complement fixation test should also be made and be negative. Should it be positive, even if films and cultures are negative, it is necessary to consider the possibility of a focus of infection elsewhere. If the patient's "cure" is to be other than a mockery, it must be ensured that the husband or consort is clear of infection before the patient resumes relationships.

Japanese Journal of Obstetrics & Gynecology, Kyoto

19: 327-428 (July) 1936

- Study on Gases in Umbilical Blood, M Noguchi—p 328
Experimental Study on Changes of Fowl Organs by O Amido-Azo-Toluol S Aoji—p 337
Maximal Number of Uterine Contractions H Hori—p 348
Supplementary Informations on Culture of Cancer of Human Uterus in Vitro H Hori and Y Esaki—p 351
Experimental Study on Effect of Rays of Various Wavelengths to Malignant Tumors Y Esaki—p 358
Biologic Changes in Magnetic Field T Saito—p 381
Experimental Study on Effect of X Rays to Metastasis of Malignant Tumor Especially in Bones Part I Metastasis of Transplanted Rabbit Sarcoma Especially the Occurrence in Bones T Yamamoto—p 388
Effect of Functional Abnormality of Maternal Thyroid to Genital Gland of Female Fetus T Tanioka—p 393

Bull. Assoc. Franç p l'Étude du Cancer, Paris

25: 591 668 (June) 1936

- *Place of Ablation of Grafted Tumors in Production of Metastases G Roussy C Oberling and M Guerin—p 592
- Study of Myelosarcoma of Cervix L Berard, J F Martin and P Ponthus—p 611
- New Diagnostic and Therapeutic Problem of Cancer Appearance of Primary Lung Cancer After Cancer of Uterus R Huguenin P Brian Garfield and Odette Boucabeille—p 621
- Three Successive Primary Cancers in Same Patient Nemours Auguste David and Bonhomme—p 629
- Lymphosarcoma of Rectum Appearing Three Years After Lymphosarcoma of Both Tonsils F Bertillon and M Liberson—p 634
- Röntgen Therapy of Nevocarcinomas J Coste—p 641
- Iso-Electric Point of Blood Serum in Healthy and Cancerous Subjects M Faguet—p 645
- *Authentic Observations of Spontaneous Transmission of Cancer from Man to Man I Balacesco and S Tzovaru—p 655

Ablation of Grafted Tumors and Metastases—Roussy and his collaborators have recently reported a study of the behavior of different tumors after ablation. For control purposes it was necessary to determine exactly the proportion of spontaneous metastases occurring with the various tumors without ablation. Thus, for Jensen's sarcoma they noted 81 per cent of spontaneous metastases, but actually for control purposes 25 per cent is a more accurate figure. These investigators then removed the tumor from more than 200 rats with grafted Jensen sarcomas. The removals were partial or total and were performed on tumors of different sizes, but in the majority of instances of large size. Total ablations were carried out on 143 rats. Sixty-three of these remained cured, thirty-one had local recurrences, thirty-five had recurrences and metastases and fourteen showed metastases alone. Thus, metastases were noted in 34 per cent of the total. Partial ablations were performed on sixty-seven rats, of which number thirty-eight developed metastases. On the whole, similar observations were made with other tumors, such as the Flexner-Jobling carcinoma and Murray carcinoma of the mouse. These investigations demonstrate that the origin of metastases after excision of grafted tumors depends on a number of factors including the operative act itself and the local and general disorders that it engenders, both of which are factors that favor the proliferation of cancerous cells. Furthermore, the removal of a tumor favors the proliferation of the remaining tumor cells, although the mechanism of this phenomenon remains unknown. It is probably complex and does not depend solely on the nutritive factor. It must also be realized that ablation can favor the production of metastases by prolonging the duration of evolution of a tumor. It is important, the authors believe, to determine the different behavior with regard to metastases of different types of grafted tumors. The results obtained can apply only to those tumors which were examined and cannot be carried over to other grafted tumors or spontaneous human cancers.

Spontaneous Transmission of Cancer—Balacesco and Tzovaru describe an ulcerated carcinoma of the breast transmitted spontaneously to the lips of a nursing infant, probably by the mechanism of grafting by direct contact. The histologic diagnosis of the cancer of the mother was a trabecular adenocarcinoma infiltrating the breast and having zones of scirrhous transformation. The connective tissue showed necrotic areas and ganglionic metastases. The histologic diagnosis of the tumor of the infant's lip was fusiform sarcoma. The second tumor, according to the authors, was obviously not of the same structural characteristics as the tumor of the mother. The interval elapsing before the development of the second tumor was about eleven months. The difference in character of the two tumors may lead to question as to the identity of origin. The question of transformation of an epithelioma into a sarcoma has served as the subject for prolonged discussions and controversies. It is probable, however that, along with the epitheliomatous evolution of grafted epithelial cells a sarcomatous evolution may also be produced, dependent either on the conjunctival element of the graft or on the stroma furnished by the tissues of the host. The latter explanation remains the choice of the authors.

Journal d'Urologie Méd et Chirurgicale, Paris

42 193 308 (Sept) 1936

- Evolution of Kidneys After Ablation of Renal Calculi Marion.—p 193
- Renal Lithiasis as Sequel to Rupture of Ureter by Pelvic Fracture, Gayet.—p 205
- Must One Operate for Cancer of Prostate? André.—p 212
- Neoformations of Neck of Bladder in Women M Heitz Boyer—p 216
- Lithotripsy E Michon.—p 252
- *Prostatic and Prostatectomy Hemorrhages O Pasteau—p 256
- Conduct in Case of Abortive Treatment of Missed Gonorrhea J Janet—p 262
- Extravascular Anastomoses of Ureter in Women. P Malgras—p 269

Prostatic Hemorrhages—Pasteau believes that hemorrhage from the prostate occurs much more frequently than is generally believed. Traumatism is frequently responsible, but spontaneous hemorrhage is far from rare. The most important method of diagnosis of prostatic hemorrhage is furnished by catheterization. The most important aspect of treatment consists in avoidance of trauma so that the prostate may not be injured. However, once bleeding has set in, complete removal of the clot by aspiration becomes necessary. If bleeding continues in spite of these measures, suprapubic cystostomy must be performed.

Presse Medicale, Paris

44 1417 1432 (Sept. 9) 1936

- *Sugar Therapy in Intoxication by Mushrooms L Binet and J Marek—p 1417
- Parathyroids and Diabetes J Olmer and J E Paillas—p 1418

Sugar Therapy in Mushroom Poisoning—The marked hypoglycemia reported as occurring in mushroom (*Amanita phalloides*) poisoning led Binet and Marek to the experiments reported in this paper. The dry powder of the mushroom reduces its toxicity for a long time and it was this substance that served as the experimental injectable preparation. They used from 10 to 20 mg of dried mushrooms per kilogram of body weight of the animal by subcutaneous injection. When given orally, 0.1 Gm per kilogram of body weight was used. When rabbits were injected with this substance, no disturbance appeared for eight or ten hours, after which a profound asthenia set in. Frequently repeated convulsions would occur after this period. Death usually occurred about the twenty-fourth or thirty-sixth hour after the injection. Both in these animals and in dogs there was a marked fall in the blood sugar after the first four hours. The convulsions observed in the rabbits were apparently due to hypoglycemia, which therefore suggests a possible corrective method. To another series of rabbits given similar doses of dried mushrooms, sugar also was administered. After various trials the administration of 20 cc. of a 4 per cent solution of dextrose intravenously four or five times a day was adopted. The first dose was given eight or ten hours after the injection. With this method, nine out of twelve rabbits survived, although none of the untreated ones lived. Of the animals treated with sugar and living, there was a marked loss of weight later in spite of a rapid increase in quantity of food taken. All showed glycosuria and albuminuria between the third and sixth days, and three animals also showed an increase in blood urea. Although these observations were all of an experimental nature, the authors believe that the sugar method of treatment offers a safe and efficacious method of treating mushroom poisoning.

Schweizerische medizinische Wochenschrift, Basel

66 853-884 (Sept. 5) 1936

- Lipoid Nephrosis and Its Treatment. F Rathery—p 853
- Natural Self Protection and Regulation in Circulation E P Pick.—p 860
- Results of Bronchospirrometry H C Jacobaeus—p 865
- *Influence of Allergy on Tuberculosis P Schwartz.—p 874

Influence of Allergy on Tuberculosis—Schwartz describes animal experiments in which it is proved that every infection with tubercle bacilli produces an increase in the sensitivity toward new specific infections. If the infected organism at the height of its sensitivity is exposed to hematogenic or exogenic dissemination of tubercle bacilli, there develops a shocklike symptomatology, which frequently leads to a fatal termination. However, if the organism survives the crisis that is produced by the hypersensitivity reaction, the crisis may be

the beginning of a process of healing The author applies the experimental observations to human pathology In giving his attention to the tuberculosis in children he takes up the primary complex, hematogenic dissemination and bronchial dissemination He says that tuberculosis in adults occurs in the same forms as during childhood

Archivio di Patologia e Clinica Medica, Bologna

16: 295-424 (Aug.) 1936

Clinical Value of Venous Pulse Especially in Thyroid Hyperfunction F Introna.—p 295

Lipoid Nephrosis Cases G Ferro-Luzzi and F Romeo.—p 329

Adenocarcinoma of Jejunum and Ileum Case C Manzini.—p 349

*Polypeptidemia in Blood and Liver Diseases G Benedetti.—p 380

Combined Valvular Insufficiency, Endocarditis and Frosted Liver Case A. Luisada.—p 404

Polypeptidemia in Blood and Liver Diseases—Benedetti found normal polypeptidemia analogous to that reported in the literature (2.5 mg per hundred cubic centimeters of blood) but a normal index of deamination of 0.08, which is lower than that previously reported, varying between 0.1 and 0.2 The author reports the results of determinations of polypeptidemia in blood and liver diseases and concludes that hyperpolypeptidemia appears in blood diseases if they are complicated by hepatorenal disturbances or fever or if they are associated with hemolysis In grave forms of anemia secondary to hemorrhage and in those associated with hydremia, frequently there is a relative hypopolypeptidemia In grave insufficiency of the liver, polypeptidemia is increased In ascitic cirrhosis the improvement of circulation and digestive absorption, following paracentesis, associates itself with constant diminution of hyperpolypeptidemia According to the author, polypeptides are not toxic substances but proteins, analogous to amino acids and useful to the organism Hyperpolypeptidemia coexists with nervous, humoral and toxic symptoms in several diseases, but it is not the cause of the symptoms

Ginecologia, Turin

2: 803 906 (Sept.) 1936

Urea Clearance Test in Pregnancy and Puerperium E Berutti.—p 803

Renal and Hepatic Lesions from Uranium Nitrate Poisoning in Normal and Oophorectomized Rabbits Histologic Study A. Salvini.—p 846

*Behavior of Zambri Pylororeaction in Pregnancy Labor and Puerperium. R. Bolaffi.—p 871

Influence of Diet of Mothers on Amount of Carotenoids in Colostrum and Milk. V Madon and E Guidetti.—p 889

Zambri Pylororeaction in Pregnancy—The Zambri pylororeaction is based on the changes of saliva produced by addition of a coloring reagent prepared as follows cochineal carmine 1 Gm, bioxiantroquinone 7 Gm, trioxiantroquinone 1 Gm, tincture of madder 13 Gm, and 95 per cent alcohol 100 Gm One cubic centimeter of saliva is taken from a washed mouth directly into a graduate to which 15 or 20 drops of the reagent is added The graduate is shaken, its mouth being covered with white paper The saliva, in contact with the reagent, takes a color that may vary from light yellow to dark violet. The results of the test can be interpreted immediately after the test or later and do not change for several hours or days provided the tube is left in a dark place The Zambri standard chromatic scale of the test has sixteen different shades In the original test light shades (low figures in the scale) indicate a diminished vital resistance, whereas dark shades (high figures in the scale) indicate good vital resistance The color changes in the test from dark to light indicate humoral variations in pathologic conditions The test is of clinical value because the color scale in the saliva varies with the evolution of the disease to lighter shades on aggravation and to darker shades on improvement of the patients Bolaffi made the test in normal and pathologic pregnancy, labor and the puerperium He states that the reaction is reliable because it shows the real organic condition in all cases In toxic forms of pregnancy, as well as in cardiac diseases and pulmonary tuberculosis complicating pregnancy, the variations of the color in the saliva correspond to the clinical evolution. The test shows sensitivity during labor in its color modifications to lighter shades if the woman is fatigued. A normal puerperium does not induce noticeable variations in the behavior of the test.

Minerva Medica, Turin

2: 241 264 (Sept 15) 1936

Electrocautery Resection of Pneumothoracic Pleural Adhesions U Carpi.—p 241

*Behavior of Lactacidemia in Diabetic Patients Before and After Administration of Epinephrine S Battistini and L Herlitzka.—p 248

Neurasthenic and Psychasthenic Syndrome in Course of Essential Hypochrome Anemia A M Bonnano.—p 252

Behavior of Osmotic Resistance of Erythrocytes and Hemoglobin Metabolism in Acute Phase of Decompensation and in Compensation in Heart Diseases M Francescon.—p 255

Behavior of Lactacidemia in Diabetes—Battistini and Herlitzka aimed at ascertaining the origin of hyperglycemia that follows administration of epinephrine in normal persons They studied the behavior of lactacidemia in diabetes, before and after administration of epinephrine, and conclude that lactacidemia and glycemia in the arterial and venous blood are equal when the determinations are made with the patients at rest and with fasting stomachs Following the administration of epinephrine, lactacidemia increases, especially in the venous blood, glycemia does not increase or increases slightly, especially in the venous blood, and the ratio between the molecular concentration of lactic acid and dextrose increases in relation to the intensity of lactacidemia. The slight hyperglycemia induced by epinephrine in diabetic patients, in comparison with that induced by the same test in normal persons, depends on the lowered reserves of carbohydrates in diabetic patients It originates in a mobilization of dextrose from the muscles and perhaps also from dextrose stored in the liver Dextrose mobilized by epinephrine becomes reactive and increases the amount of reactive dextrose in the blood of the patients This mechanism explains hyperglycemia following administration of epinephrine in normal persons

2 265 288 (Sept 22) 1936

Asthenia in Symptomatology of Gastroduodenal Ulcer L Bordoli.—p 265

*Lactacidemia in Renal Insufficiency A Cionini and L Herlitzka.—p 268

Lipid Metabolism in Cancer of Internal Genitalia in Women Before and After Surgical Radium and Roentgen Treatments M Titone.—p 271

Lactacidemia in Renal Insufficiency—Cionini and Herlitzka determined the lactacidemia in a group of patients suffering from complete renal insufficiency Their work aimed at verifying the role of lactacidemia in the pathogenesis of uremic acidosis They conclude that lactacidemia is normal in patients suffering from complete renal insufficiency with moderate hyperazotemia and is increased in those presenting complete renal insufficiency with a high degree of hyperazotemia In the latter group hyperlactacidemia is not intense and does not parallel the variations of hyperazotemia. As a rule, a lowering of the alkali reserve coincides with an increase of lactacidemia, but the variations of the latter do not parallel those of the former Renal retention and possibly also anoxemia of the tissues due to circulatory insufficiency are the main factors involved in the development of lactacidemia in renal insufficiency Hyperlactacidemia does not seem to play an important part in the development of uremic acidosis

Pediatria, Naples

44: 853 948 (Oct. 1) 1936

Actual Reaction of Feces of Infants in Relation to Diet in Nutritional Disturbances R Pachiohi and V Mengoli.—p 853

Specificity of Skin Reaction to Tuberculin in Biologic Diagnosis of Tuberculosis. A. Corbia.—p 869

*Plaster Tuberculin Test Simplification of Percutaneous Test. M Verde.—p 874

Alterations of Blood and Bone Marrow Cells in Toxic Infections in Infants A Pouché and F Teclazic.—p 882

Postdiphtheritic Hemiplegia Case L Taranto.—p 903

Eclamptic Pseudo-Uremia with Inflammatory Meningeal Reaction in Course of Acute Glomerulonephritis Case. G Dondi.—p 910

Simplification of Percutaneous Tuberculin Test.—Verde performed the Pirquet and Mantoux reactions and the tuberculin plaster test in 165 children ranging in age between 2 months and 11 years The tests gave positive results as follows Pirquet 49 per cent, Mantoux 557 per cent and

tuberculin plaster test 51 per cent. The author concludes that the tuberculin plaster test has the following advantages over the Pirquet and Mantoux reactions: a simple technic, which permits rapid performance of the test by physicians and sanitarians, without having to resort to surgical instruments and without trauma or pain. The test is not followed by complications, pseudoreactions, abnormal reactions or infection. The results show sensitivity of the skin early in the development of tuberculosis, so that the test can be used not only in early diagnosis but also in preventing the disease. It is advisable to resort to the test as a preliminary to the Mantoux test, which can be made by physicians in cases selected from the results of the tuberculin plaster test.

Polichinico, Rome

43 1767 1810 (Oct. 5) 1936 Practical Section

Permanent Internal Derivation of Bile as Radical Surgical Treatment of Biliary Calculosis G. Baggio—p 1767

*Roentgen Treatment of Salivary Fistula G. Barbèra—p 1773

Roentgen Treatment of Salivary Fistula—Barbèra makes a critical study of the several operations for salivary fistula. He advises the suppression of the salivary secretions by high voltage roentgen irradiations on the area of the parotid gland by the following technic: limitation of the parotid field with lead material, focal distance 30 cm, hardness of rays 180 kilovolts, and high filtration of rays through a filter of 0.5 mm of copper and 3 mm of aluminum. The total dosage is 600 roentgens, given every other day as follows: 300 roentgens for the first irradiation and 150 for the second and third, respectively. The irradiations are measured by Hammer's instrument on the skin. Local painful swelling is relieved by applying the hot water bag on the irradiated area in the afternoon of the day on which the irradiation was given. The salivary secretion is controlled from the first roentgen treatment. After the third and last treatment it is definitely suppressed. The fistula spontaneously heals in two or three days after completion of the treatment and recurrence does not take place. Only exceptionally is a complementary operation necessary to cure the fistula, the diminished salivary secretion during the operation being an important factor for the result. He reports a case in which the satisfactory results of roentgen treatment, not followed by operation, were found to persist a long time after administration of the treatment.

Prensa Médica Argentina, Buenos Aires

23 2195 2248 (Sept. 23) 1936

Roentgen Kymogram of Normal Heart and Modifications of Left Ventricle in Pathologic Conditions M. R. Castex, E. Lanari and A. Battro—p 2195

*Ligamentopexis New Technic V. Bertola—p 2208

Quantitative Dosage of Ultraviolet Irradiations Technic A. E. Roffo—p 2215

Mega Esophagus Cases A. F. Parodi—p 2226

Ligamentopexis—Bertola performs extraperitoneal ligamentopexis by the transperitoneal route with the following technic: medial umbilicopubic laparotomy, opening of the subperitoneal layers by a 2 cm peritoneal incision (which is made on the peritoneum at the internal margin of the exit of the round ligament), exposure of the peritoneal aspect of the inguinal-abdominal region (especially at the point in which Cooper's ligament and Thompson's fascicle of ilio pubic fibers meet), separation of the round ligament from the surrounding tissues, mobilization of the segment of the round ligament included between the body of the uterus and the exit of the ligament through the peritoneal opening and fixation of the ligament (by means of a suture with chronic catgut No. 2) to Thompson's fascicle of ilio pubic fibers. The fixation is made at the level of the external edge of the anterior rectus muscle (Henle's ligament). The segment of round ligament between the point of its fixation and its exit through the peritoneal opening passes over the iliac vessels but does not compress them. According to the author, the advantages of ligamentopexis made by this technic are the preservation of the normal anatomic disposition of the uterus into the peritoneal cavity and the fact that the organ is firmly fixed. With the precaution of emptying the bladder before operating no complications set in.

Semana Medica, Buenos Aires

43: 825-892 (Sept. 24) 1936 Partial Index

Previous Pneumothorax in Surgery on Thorax J. Arce—p 825

Electrocardiographic Curve of Pericarditis R. A. Izzo J. B. Ferradás and J. M. Laplace—p 835

*Laurence Biedl Syndrome Case I. Maldonado Allende—p 841

Generalized Pneumococcal Peritonitis Case R. Naveiro—p 852

Semology of Anemia P. Cossio—p 855

New Apparatus for Performance of Artificial Pneumothorax R. S. Barousse—p 863

Fibromyoma of Fallopian Tubes Case R. Gastorini—p 869

Laurence-Biedl Syndrome—Maldonado Allende reports a typical case of Laurence-Biedl syndrome in a child aged 10 years. The patient's parents are cousins and in some members of both families there are endocrine dysfunctions. The author says that in the pathogenesis of the syndrome the insufficiency of the hypophysis in association with alterations of the hypothalamus plays the most important part. The alterations of those structures are the cause of the symptoms. Combined organotherapy of thyroid and hypophysis, administered for a long time, induces, according to the literature, improvement of many symptoms and, in some cases, the clinical recovery of the patient. In the author's case the thyroid treatment resulted in increasing the basal metabolism and improving the visual and psychic conditions of the patient.

Klinische Wochenschrift, Berlin

15: 1185 1224 (Aug. 22) 1936 Partial Index

*Reticulocytosis During Spring W. Grunke and J. Diesing—p 1190

Nontuberculous Pulmonary Cavities L. Hess—p 1191

Studies on Motility of Ureter F. Friedl—p 1197

Etiology of Diabetic Retinitis and Its Relation to Vascular and Nervous Changes R. Braun—p 1198

*Occurrence Differentiation and Experimental Transformation of Three Types of Diphtheria Bacilli K. L. Pesch—p 1202

Reticulocytosis During Spring—In the course of studies on normal persons, which were made during the spring, Grunke and Diesing observed reticulocyte values that were considerably above the values usually regarded as normal. It was decided to make tests during the different seasons. Tabular reports and a diagram indicate that the reticulocytes are nearly always increased during spring. The authors admit that they do not know the cause of this reticulocytosis which appears in the spring but they suggest that increased sun radiation, particularly ultraviolet radiation, may play a part.

Studies on Types of Diphtheria Bacilli—Pesch investigated the statements of Anderson and his collaborator to the effect that Löffler's diphtheria bacilli can be divided into three types (gravis, mitis and intermedius). He examined 2,610 pharyngeal and nasal smears and studied 332 diphtheria strains. Of these, 208 were from diphtheria patients, 115 from convalescent persons and nine from carriers. Studies on these 332 diphtheria strains corroborated the occurrence of three different types of diphtheria bacilli. These three types differ not only in the shape of their colonies, in hemolysis and in starch acidification but also in their growth on certain synthetic culture mediums and particularly in the type and rapidity of their increase in nutrient bouillon (curve of increase). Regarding the transformation of the types, the author says that after about four or six weeks in aerobic bouillon cultures there is always a complete transformation from the intermedius into the mitis type. This transformation could not be reversed even after daily transfer on new Löffler plates (continued for weeks) and after six guinea-pig passages.

Medizinische Welt, Berlin

10: 1025 1060 (July 18) 1936 Partial Index

Epidemiology Diagnosis Therapy and Prophylaxis of Weil's Disease P. Uhlenhuth—p 1025

Bornholm Disease (Acute Epidemic Myalgia) H. Zeiss—p 1028

*Rare Indications for Cesarean Operation F. Isbruch—p 1031

Saving of Life of Drowned Persons (with Especial Consideration of Present Status of Resuscitation Methods) E. Homann—p 1034

*Treatment of Sequels of Epidemic Encephalitis H. Weber—p 1038

Experiences with Prophylactic Serum Against Measles L. Rischke—p 1039

Rare Indications for Cesarean Operation—Isbruch emphasizes that he does not wish to argue for a wider use of the cesarean operation, on the contrary, he considers it the task of the obstetrician to utilize and support the natural processes. However aside from the typical indications for the

cesarean operation there are cases in which it is not only the most rapid and simplest method for the obstetrician but also life preserving for the child and the least dangerous for the mother. The author describes five cases. In the first, a cervical transperitoneal cesarean operation was done because an intra-cervical myoma made delivery by the natural route impossible, even if the life of the child had been sacrificed. The cesarean operation preserved the life of mother and child and made possible the removal of the myoma. The second case concerns a woman in whom the first delivery had resulted in a complete perineal tear with persisting rectovaginal fistula and incontinence. The second delivery was spontaneous, but repeated operations did not completely counteract the incontinence. During the third pregnancy the woman demanded that at term a cesarean operation be performed so as to avoid renewed tearing of the perineum. This was done. The author admits that after plastic repair of the perineum it is usually possible to make room enough by lateral incisions, but in this case it was impossible. In the third case the cesarean operation was resorted to on account of an extremely severe vulval edema. The fourth case concerned a woman with vaginal stenosis and hypoplasia of the uterus. Since the uterine contractions involved the danger of rupture of the hypoplastic uterus, the cesarean operation was done following the premature rupture of the bag of waters six weeks before the end of term. The fifth case concerns a uterus bicornis. In this connection the author emphasizes once more that he does not consider cesarean section necessary for all such cases but stresses that in this case the pregnancy had developed in the weaker horn, which, as the operation revealed, would not have withstood the strain of the uterine contractions.

Treatment of Sequels of Epidemic Encephalitis—Webster recommends the administration of large doses of atropine for the treatment of postencephalitic parkinsonism. In a man he begins with three daily administrations of 0.25 mg of atropine (after the morning, noon and evening meal). He considers the oral administration in the form of drops or pills the best method, but, if the oral medication is not well tolerated, it can be given also by subcutaneous injection or in the form of rectal suppositories. The dose is gradually increased by 0.25 mg daily until the subjective and objective improvement shows no further progress, which is usually the case when a daily dose of from 6 to 8 mg has been reached. After this maximal dose has been given for several days, the dosage is gradually reduced. The author says that cumulation does not have to be feared, since atropine is excreted within a few hours. The medication usually has to be continued for a long time, because it does not cure the basic process but only improves the disturbances, so that even 50 per cent of the patients with the severe forms are improved to such an extent that they can work again. If the treatment is to be interrupted by intervals, the cessation should always be gradual so as to obviate withdrawal symptoms. In some cases the doses have to be increased to more than 8 mg daily, but 12 mg is usually the maximum. The author thinks it advisable to hospitalize these patients for a while in order to be able to determine the optimal dose.

Münchener medizinische Wochenschrift, Munich

83: 1119-1158 (July 10) 1936 Partial Index

- Vitamin Deficiency as Cause and Sequel of Gastro-Intestinal Disturbances. W Stepp—p 1119
- *Practical Significance of Blood Factors M and N for Determination of Paternity. Also Contribution to Demonstration of Defective N Receptor (N 2). F Pietrusky—p 1123
- Status and Results of Research on Blood Groups. S Wellisch—p 1124
- Technic of Blood Transfusion. T Weiss—p 1131
- Rural Physician and Suppurations Above and Below the Diaphragm. K Baekmann—p 1135

Vitamin Deficiency and Gastro-Intestinal Disturbances

—According to Stepp, some vitamins are extremely unstable and thus there is a possibility that in case of changes in the gastro intestinal tract they may be destroyed before they are utilized. On the other hand, their resorption may encounter difficulties, either because the resorptive action of the epithelium of the small intestine is reduced or because in case of acceleration of the peristalsis of the small intestine the retention in the intestine is too short for resorption. The author first directs attention to the significance of the antineuritic vitamin in the gastro-intestinal function, a deficiency in this substance produces

a disturbance in the motility. He discusses the pathologic changes developing in the gastro-intestinal tract as the result of vitamin A deficiency. The hydrochloric acid secretion is reduced. Diarrheas with mucosanguineous stools often appear, but they quickly respond to cod liver oil medication. In gastro-enteritis, in which the intestinal passage is usually greatly accelerated, vitamin A resorption may be interfered with. Regarding the deficiency in vitamin B₁ the author says that this substance is absolutely necessary for the normal tonus of the musculature of the gastro-intestinal tract and that it plays an important part in the processes of resorption. The lack of vitamin B₁ results in cessation of the hydrochloric acid production, loss of appetite, atony of the gastro-intestinal tract and a peculiar tendency of the intestine to inflammatory processes. As to the vitamins B₂ and B₆, he points out that their deficiency plays a part in pellagra, stomatitis, glossitis, diarrhea, colitis and intestinal hemorrhages. Moreover, in sprue and celiac disease, a deficiency of the B factors and of vitamin C plays a part. Vitamin C is stored in the small intestine and the author says that this storage is not merely a phase of the resorption, for it is observed also if the cevitic acid is administered intravenously. In tolerance tests with cevitic acid it was observed that, in patients with gastritis in whom hydrochloric acid was absent, the elimination of cevitic acid was much less than in normal persons. This is due either to destruction of the vitamin or to the fact that the vitamin reserves are extremely low. In discussing the treatment with vitamins, the author thinks that on the whole it is better to supply the vitamins in their natural state, that is, in the food, rather than in their pure form.

Blood Factors M and N and Determination of Paternity—Pietrusky shows that there are N receptors which, in the usual method of examination even if the absorption method is used, escape detection. He cites cases in which it is advisable to consider the possibility of a defective N receptor that has escaped detection. He made efforts to produce especially potent anti N serums in order to detect with these the defective N receptor. He dilutes a good anti N serum in a ratio of 1:100 and subjects it to four or five absorptions with fresh, washed A M blood corpuscles until it fails to react with M blood corpuscles even after one hour. Then it is concentrated in the vacuum to from one fifth to one tenth of the original quantity. This is followed by filtration and, in order to obtain a physiologic solution, it is subjected to dialysis. If in the purity test with blood corpuscles M it shows agglutination within the first thirty minutes, it is once more subjected to absorption with A M and to concentration. In this manner the author obtained an extremely sensitive anti N serum. A case in which the ordinary serums had failed could be completely cleared up with the new serum. The author emphasizes that the blood group analyses, on which legal decisions are based, should be made only by laboratories which are entirely competent for such work.

Wiener medizinische Wochenschrift, Vienna

88 985-1048 (Sept. 5) 1936 Partial Index

- Papillomatosis of Renal Pelvis and Ureter. P Blatt—p 987
- Perinephritis. E Felber—p 999
- Diverticula of Female Urethra. A Glingar—p 1000
- Dislocation and Compression of Ureters by Retroperitoneal Glands. E Kornitzer and L. Reich—p 1015
- Demonstration of Tubercle Bacilli in Urinary Disease with Aid of Löwenstein Culture Method. S Pelz—p 1027
- *Decapsulation and Denervation of Kidneys. S K Sen—p 1035

Decapsulation and Denervation of Kidneys—The discovery of the effect of sympathectomy on the blood pressure has reawakened, according to Sen, the interest in kidney decapsulation. In his material the author found a fall of blood pressure after decapsulation of a kidney and application of phenol to the renal blood vessels. The blood pressure, however, never failed to rise once more, so that a permanent result was not obtained. The removal of the thickened capsule in thirty-two cases of perinephritis was successful in relieving the pain and the condition itself. The author likewise saw successful application of decapsulation in sixteen out of eighteen cases of hematuria in focal nephritis and in hemorrhagic nephritis. Decapsulation was effective in four cases of ascending kidney infection. He concludes that the operation of decapsulation gives gratifying results when performed for a proper indication.

Polska Gazeta Lekarska, Lwów

15:753 768 (Sept. 27) 1936

- *Experimental Studies on Sterilization of Surgical Instruments in Distilled Water E Wajgiel and A. Dzizynski—p 753
- Excess of Vitamin C in Healthy and Diseased Persons W Tomaszewski—p 756
- Efficacy of Treatment of Chronic Catarrh of Neck of Uterus with a 10 Per Cent Colloidal Silver Preparation Containing Sodium Cholate E Ostojka Ostojski—p 759

Sterilization of Surgical Instruments—Wajgiel and Dzizynski report experimental studies on the sterilization of surgical instruments in distilled and undistilled water and on its action on colon bacilli, *Bacillus pseudotuberculosis*, *Bacillus prodigiosus*, *Staphylococcus pyogenes-aureus*, *Bacillus pseudanthracis*, *Bacillus mesentericus* and *Bacillus subtilis*. In distilled water at 100 C some of the bacteria, such as *Bacillus subtilis* and *Bacillus mesentericus*, are destroyed in half the time it takes in undistilled water at the same temperature. The observations prove that the instruments can be equally well sterilized in either distilled or undistilled water. In boiling distilled or undistilled water of the same pH *Bacillus subtilis* is killed in the same length of time.

15 769 788 (Oct. 4) 1936

- *Pyogenic and Necrotic Diseases of Lungs and Their Treatment A. Landau, E Steffen J Gryfenberg—p 769
- *Excess of Vitamin C in Healthy and Diseased Subjects W Tomaszewski—p 773
- Experiment with Soneryl (a White Crystalline Hypnotic, Butyl Ethyl Barbituric Acid) as Somniferous Remedy A Erb—p 779

Treatment of Pyogenic and Necrotic Diseases of Lungs—Landau and his co-workers state that during the last twenty-five years pyogenic and necrotic diseases of the lungs have had three stages in their treatment. 1 Before the introduction of pneumothorax, pharmacologic remedies were applied by mouth, but the results were unsuccessful. Arsphenamine proved satisfactory in cases of syphilitic origin. 2 Pneumothorax was applied to the upper part of the lungs with fairly good results and in some cases to the lower lobes also with success. 3 Alcohol was introduced intravenously and aided in postponing conservative treatment (drugs and arsphenamine) and was especially beneficial when combined with pneumothorax. Following is a summary of their cases: (a) out of a group of thirty-six pyogenic patients treated with pneumothorax, twenty-two (61 per cent) recovered or were much improved, eleven showed no improvement and three died; (b) of forty-six necrotic patients treated with pneumothorax and alcohol, twenty-one (48 per cent) recovered or were much improved, fourteen were not benefited and eleven died; (c) of eighteen patients treated with alcohol, seven recovered and six improved (a total of thirteen or 72 per cent, benefited). Alcohol aids in healing after operation.

Excess of Vitamin C in Healthy and Diseased Subjects—Tomaszewski states that he has experimented with vitamin C in both healthy and diseased persons. Researches have been made on the mechanism of behavior of vitamin C in the body, especially in the blood. The normal elimination in twenty-four hours of healthy persons who have had plenty of vitamin C is in excess of from 18 to 30 mg (Tillmann's method of dichlorophenolindophenol). In persons considered healthy but not receiving enough vitamin C examination discloses the results of hypovitaminosis. An organism oversupplied with vitamin C excretes the excess on the first day through the urine. Almost all the diseased patients on whom the research was made with the aid of an excess of vitamin C showed marked degrees of hypovitaminosis, depending on the kind of disease and method of treatment (such as an ulcer diet). A distinct lack of vitamin C has been noted in some cases of diseases of the blood and of the digestive organs and in chronic rheumatism. In patients with high temperatures there is great excretion, especially at the onset, and examination of the urine is of great value in demonstrating such cases. It is likely, therefore, that the reduction bodies in cases of high temperature are not altogether those of vitamin C but come partly from another source. In cases of diabetes, low excretion has been observed which must be ascribed to the strong dilution of the vitamin C in the urine. During pregnancy the amount of vitamin C is often diminished, probably because of increased

demand. Hypovitaminosis during pregnancy causes low resistance and is probably one of the causes of infection in the urinary tract during this time. Stages of low vitamin C or hypovitaminosis are not considered a disease, but, in cases of low general resistance, influence the time of recovery from various diseases.

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Early Diagnosis of Sarcoma of Skeletal Musculature

On the basis of seventy-five cases of sarcoma of the skeletal musculature observed at the Oncologic Institute in Leningrad from 1927 to 1934, Shanin states that correct diagnosis can be made on clinical data aided in some of the cases by a histologic examination. The clinical diagnosis includes the study of the etiologic factors, the early signs of a swelling, its origin, the localization of the involved muscle or group of muscles, the relation of the swelling to the neighboring tissues and the differentiation from other pathologic processes involving skeletal muscles. Trauma and a preceding infection appear to be the predisposing factors in a certain number of the cases. The majority, however, give no history of either. Pain, in a number of cases the result of a residual myositis of a preceding trauma or infection, is one of the earliest symptoms. There may be likewise early involvement of a nerve trunk or of a blood vessel giving rise to pains, paresthesias, anesthesias or feeble pulsation in the involved arterial trunk below the tumor. Histologic diagnosis is particularly valuable in determining the prognosis. The author feels that the state of maturity and distribution of the muscular fibrous substances is of a greater prognostic significance as to malignancy in a given case than the quantitative and qualitative relationship of the stroma to the parenchyma of a sarcomatous tumor.

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Isolated Traumatic Rupture of Pancreas—Bönnsdorff says that rupture of the pancreas as the only lesion is rare and presumably occurs, when the stomach is empty, through pressure of the pancreas against the spinal column by the object struck. The prognosis is grave. The phenomenon of primary shock, followed by improvement and then aggravation with simultaneous appearance of a tumor in the epigastrium is characteristic in a number of the cases of isolated rupture of the pancreas (Garre and Kjöfte). The author's patient, a girl aged 8, fell from her bicycle about four and a half hours after a meal and hit the right side of the epigastrium against the handle bar. After a relatively free interval of three weeks, aggravation with almost incessant vomiting occurred and she was admitted for treatment a week later. Attention is called to the fact that a child could eliminate up to 800 cc of secretion, probably mostly pancreatic juice, daily for several weeks without impairment of digestion, and also to the increased diastase values in the urine considered by Usland of great diagnostic significance. There was no glycosuria in this case and no fatty necrosis. Authors agree that as far as possible the ruptured place should be sutured and drained (Usland). In this case the patient was well five weeks after simple drainage.

